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TECHNICAL REPORT ARTSD-TR-80001

# ELECTROSTATIC PROPENSITY OF GARMENTS MADE OF NOMEX WITH ONE PERCENT METAL FIBERS COMPARED WITH FLAMEPROOF COTTON

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NOVEMBER 1980

US ARMY ARMAMENT RESEARCH AND DEVELOPMENT COMMAND
TECHNICAL SUPPORT DIRECTORATE
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20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Garments which are worn by munitions handlers have a tendency to accumulate high electrostatic voltages depending on garment material, type of shoes worn, humidity, temperature, and composition of flooring. This test study compared garments made of flameproof cotton with garments made of two types of material woven from Nomex with 1% metal fibers. Electrostatic charge was measured using two methods: Hand discharge to an electrometer and a static meter gun held at 5, 15.25, and 30.5 cm (2, 6, and 12 in.).

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## SUMMARY

Tests were performed to compare electrostatic charge developed on garments made of flameproof cotton with two types of material containing Nomex with metal fibers [Riegelstat F4X and Nomex with 1% stainless steel (Nomex SS)]. The data show:

1. Riegelstat F4X and Nomex SS were comparable to flameproof cotton in propensity to generate static charge. Nomex SS coveralls can be substituted for cotton coveralls now worn by explosive handlers.

2. Electrostatic voltages are negligible if Nomex SS or flameproof cotton coveralls are worn with conductive shoes and the floor is grounded.

3. Very high voltages can be generated which can prove hazardous if the explosives handler wears insulated shoes or the floor is insulated.

4. Generated electrostatic voltage levels are greater at lower humidities for test conditions of insulated shoes and/or insulated floor.

5. Static charge-generating propensity of Riegelstat F4X and of Nomex SS, after washing, was not conclusively determined.

CONTENTS

# INTRODUCTION

A study was initiated to compare the static charges generated by cotton garments and by garments manufactured from two types of material containing Nomex with 1% metal fibers:

1. Ninety-nine percent Nomex and 1% Brumsmet fiber, manufactured by Riegel Textile Corporation (hereinafter referred to as Riegelstat F4X).

2. Ninety-nine percent Nomex and 1% stainless steel fibers (hereinafter referred to as Nomex SS).

The test plan included a general discussion on electrostatic charging, methods of measurements, and types of systems that could cause an electrostatic problem (app A).

The test plan also specified an evaluation of fabric surface resistance measurements that could be reliably used to observe the propensity of a garment to generate an electronic charge and its ability to dissipate that charge.

Tests were performed specifically to determine how Nomex with *metal fibers* (Riegelstat F4X and Nomex SS) compared with cotton, if either or both were an improvement over cotton, and if either or both could replace cotton fabric used in garments worn by explosive handlers and visitors to explosive areas. The following garments were tested:

1. Coat, Workrite Uniform Company, Riegelstat F4X

2. Coverall, Worklon Company, Nomex SS

3. Standard stock cotton coveralls

   a. New without flameproofing

   b. New with flameproofing

   c. Old with flameproofing

Tests were performed in an atmospherically controlled chamber at 19% relative humidity, 21°C (70°F) and at 37% to 40% relative humidity, 24°C (75°F).

When the test subject wore conductive shoes, the static charge was minimal and, therefore, fewer tests were required. When the test subject wore insulated shoes, a minimum of three and a maximum of five readings were taken for each test:

1. Walking on copper plate

2. Walking on asbestos tile

3. Sliding about a plastic covered metal chair and then arising from it.

4. Sliding about on both a grounded and ungrounded metal chair and then arising from it.

5. Walking on conductive linoleum.

To record electrostatic propensity, the test subject, while standing on a conductive sheet (copper or conductive linoleum), grasped the probe of an electrometer with the fingers of his right hand. Electrostatic voltage measurements were taken while the subject wore both insulated spark-proof shoes and conductive shoes, with and without conductive sheet grounded. Sixteen separate tests were made on each garment; each test was performed three to five times, resulting in 48 to 80 separate readings for each relative humidity. The number of readings were again doubled because the copper measurement plate was either grounded or insulated.

The capacitance-to-ground of the test subject was measured with conductive and insulated spark-proof shoes. The following capacitance were recorded:

| Capacitance (picofarads) | Conditions |
|---|---|
| 120 | Insulated shoes, copper measurement plate grounded |
| 120 | insulated shoes, copper measurement plate not grounded (insulated) |
| 4600 | conductive shoes, copper measurement plate grounded |
| 3770 | conductive shoes, copper measurement plate not grounded (insulated) |

The energy available from hand discharge, dependent on the charge induced and the capacitance of the subject's body, can be calculated by

$$E = \frac{1}{2} CV^2 \text{ joules}$$

where E is the energy in joules, C is the capacitance in farads, and V is the maximum voltage as read on the electrometer.

Using representative values, a man wearing insulated shoes and charged to 10,000 volts has stored 60,000 ergs as electrical energy; whereas, if he were wearing conductive shoes which allow an electrostatic voltage of 100 volts, he has only stored 200 ergs of energy.

The ability of the human body to retain charge is determined by its leakage time constant which is the body's capacitance times its leakage resistance. The leakage resistance of the test subject from hand through shoes to ground was measured and found to be as follows:

1. With insulated shoes: $4 \times 10^{11}$ ohms

2. With conductive shoes: 500,000 ohms

With conductive shoes, the leakage time constant is:

$$t = RC = 5 \times 10^5 \times 4600 \times 10^{-12} = 2.3 \text{ milliseconds}$$

Similarly, with insulated spark-proof shoes, the leakage time constant is 48 seconds.

The human body's discharge time constant is determined by the product of the body's capacitance in series with 5,000 ohms plus the external discharge resistance. Assuming a man is wearing insulated shoes and discharging into a low resistance, his discharge time constant is 0.6 microseconds.

## TEST PROCEDURE

### Measurement of Electrostatic Discharge from Hand

The test subject, attired in a Riegelstat F4X, Nomex SS or cotton garment, flameproof treated or untreated, performed body

movements simulating work conditions. The garments were first conditioned by being hung overnight in a test chamber at the desired temperature and relative humidity. After performing selected body movement, the test subject walked on a copper measurement plate and touched an electrometer probe. The body voltage was indicated on a Keithley 610B voltmeter and the maximum value was recorded. The body movements for which tests were performed were as follows:

1. Subject sliding about on a vinyl simulated leather covered metal chair and then arising from it.

2. Subject sliding about on a metal chair and then arising from it.

3. Subject walking on a metal plate.

4. Subject walking on asbestos tile.

The above tests were performed under the following conditions:

1. Relative humidity: 37-40%; temperature 24-26°C (75-79°F)

2. Relative humidity: 19%; temperature 21°C (70°F)

3. Metal plate: grounded and ungrounded

4. Metal chair: grounded and ungrounded

5. Footwear: conductive and insulated, spark-proof shoes

6. Clothing worn under the test garments: polyester knit trousers, combination polyester/cotton shirt, nylon or dacron socks and polyester tie.

When the subject wore insulated shoes, three to five tests were performed for each operation.

Appendix B delineates the raw data documented in testing of the following garments:

1. Coats, Riegelstat F4X, Workrite Uniform Company (Items 1, 2, 3 and A of app B)

2. Coveralls, Nomex SS, Worklon Company (Item B)

3. Coveralls, cotton, new, non-flameproof (Item C)

4. Coveralls, cotton, new, flameproof (Item D)

5. Coveralls, cotton, old, flameproof (Item E)

6. Coveralls, cotton, new, non-flameproof (Item F)

7. Coveralls, Nomex SS, Worklon Company (Item G)

After the above garments were tested, first at 40% and then at 19% relative humidities, they were washed ten times, using a standard washing procedure. Flameproof treatment was applied to the cotton garments after each washing. The Nomex-plus-metal-fiber garments received no flameproofing. Two garments (unwashed) were used as controls to compare electrostatic discharge with those garments washed.

Electrical Surface Resistance of Garment Fabric

Surface resistance measurements were made prior to the first washing and after the tenth. Three types of resistance measurements were made: voltage current type using a Keithley 610B Electrometer, resistance type using a Keithley 610B Electrometer, and a Simpson Voltmeter (VOM) which was used whenever the Keithley 610B Electrometer was overloaded due to Kiegelstat's low surface resistance. Figure 1 shows the test setup for the voltage/current method. Tests were performed on samples of specific size as determined by the dimensions of the concentric-ring electrodes. Based on the dimensions of the concentric-ring electrodes, ohms/square can be obtained by multiplying the resistance obtained by the constant 15.5.

The variable-voltage power supply is adjusted to any value up to 1,000 volts, taking care not to overload the current meter, a Keithley 610B Electrometer. Resistance is calculated by:

$$R = \frac{E}{I}$$

where E = power supply voltage (volts)
and I = current measured with the electrostatic voltage meter (amperes)

With a Keithley 610B Electrometer, resistance can also be measured directly. The power supply is not used in this mode.

When Nomex SS was tested, the test voltage caused a decrease in resistance, allowing current magnitudes to flow beyond the range

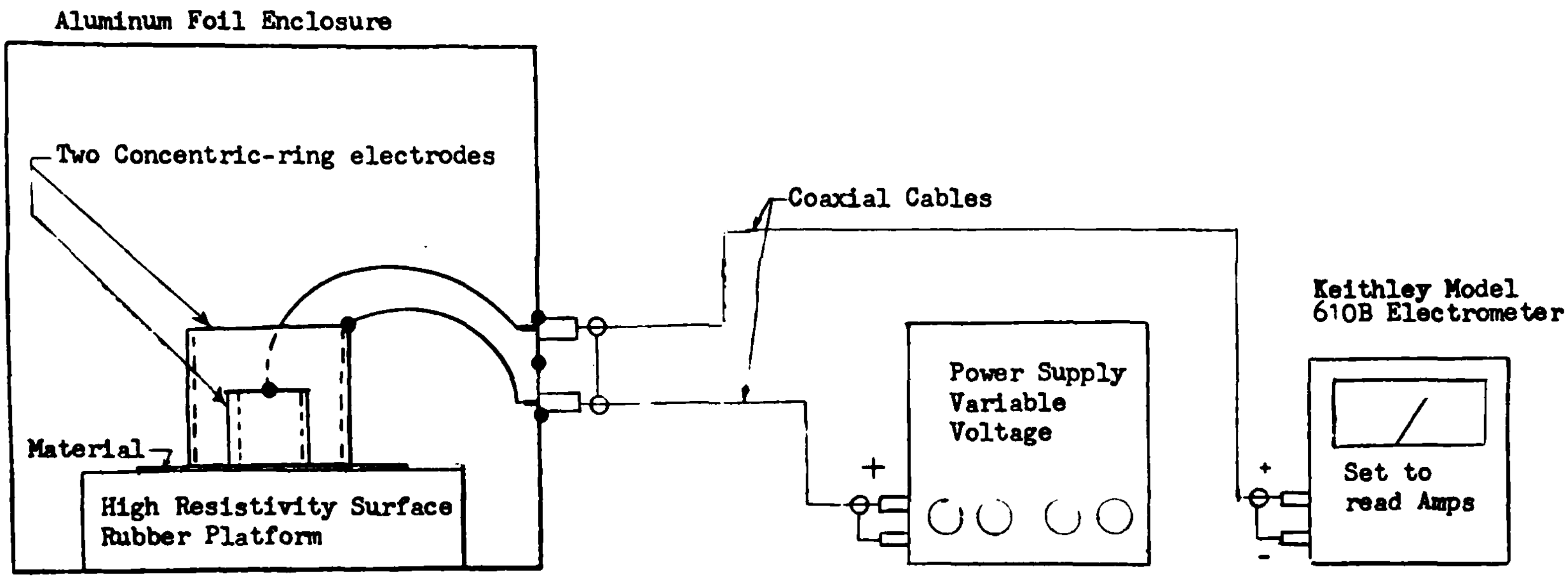


Figure 1. Voltage/current method of testing for surface resistance

of the Keithley 610B Electrometer. Therefore, an ohmmeter reading was made first of the material's resistance as received (app C).

Since Nomex with metal fibers developed low surface resistance after being washed ten times, an ohmmeter was used to obtain additional information.

### Test Subject Capacitance

Capacitance during the electrostatic propensity tests was measured while the test subject was wearing both conductive and insulated shoes and standing on a copper plate (app D). The copper plate was either grounded or ungrounded to conform with the test requirement. The values of capacitance thus obtained made it possible to calculate energy stored on the test subject and to clarify the static charge phenomenon. The capacitance was obtained with the test subject's holding the capacitance measurement terminal of the General Radio Type 1650A Impedance Bridge while an operator adjusted its settings.

### Test Subject Resistance to Ground

The resistance of the test subject to ground was obtained by his grasping the test probe of the Keithley 610B Electrometer. Resistance measurements were obtained using the voltage/current and the resistance method (app E). The resistance method was exclusively used for conductive shoes and only with the mesurement plate grounded. For insulated shoes, the measurement plate was either grounded or ungrounded (insulated). With the voltage/current method, resistance is calculated by

$$R = \frac{V}{I}$$

### Static Meter Gun Measurements

A static meter gun was held close to, but not touching, the garment being measured for electrostatic charge accumulation. Electric charge was not lost from the garment. The static meter was calibrated for distances of 5, 15.25, and 30.5 cm (2, 6, and 12 in.) away from the garment. Meter gun readings were made of the electrostatic potential on the garment's back, front, and coverall cuffs or polyester trouser cuffs (when coat rather than coverall was worn). The purpose of these tests was to measure the maximum electrostatic potential accumulation on each garment and compare the results with voltage measurements obtained with the electrometer. Repetitive tests were performed with the test subject's wearing either insulated or conductive shoes with the different types of garments, as was specified in the test plan.

Test equipment is listed in appendix F.

## DISCUSSION

### Comparison of Nomex Containing 1% Metal Fibers with Cotton

Nomex, a synthetic material manufactured by duPont Corporation, has superior properties of flame resistance compared with cotton. Garments of Nomex used by explosive handlers have the additional advantages of uniformity and reliability of flameproof properties as compared with flameproof-treated cotton garments. The superior wearability of Nomex over cotton significantly offsets increased cost.

Since Nomex is a synthetic material, it tends to generate static charge in use. For applications where it is important to minimize static charge, 1% metal fibers are woven into the material. Two such materials are evaluated in this report for comparison of static charge propensity as compared with cotton; one is Riegelstat F4X and the other is Nomex SS.

No attempt was made in this test program to generate the maximum possible static charge. Rather, the emphasis was to evaluate the comparative static-charge-generating propensity of the materials being evaluated over a range of test conditions considered realistic for the intended use of the garments. The total raw data that was generated is found in appendix B.

When the test subject wore conductive shoes rather than insulated shoes, the monitored static charges were considerably lower. However, even when the test subject wore conductive shoes, knee-length coat and polyester knit pants, the gun-type static meter registered voltages as high as 5,000 on the trouser cuffs. This was localized phenomenon and was present despite the fact that the data monitored with a hand on the electrometer probe indicated 160 volts (app B). Gun measurements on the coat were zero. For this same coat, when the test subject wore insulated shoes, his body voltage was nearly 9,000 volts; gun readings on the garment were as high as 8,000 volts; and gun readings on the trouser legs were as high as 10,000 volts. Similar measurements made with coveralls that did not allow the pant legs to be exposed had very low gun voltage readings (app B).

These data indicate the necessity of explosive handlers' wearing conductive shoes; also that static charge dissipative coveralls be worn in lieu of knee-length work coats which allow trouser legs to be exposed. If these protective measures are taken, clothing worn under the coveralls (that by themselves have static-charge-generating propensity) will not generate static charge voltages on the outside surface of the coveralls, thus averting static charge hazard for explosive handlers.

Whether the conductive plate is grounded or ungrounded, the static charge measured is the same (app G). The reason for this is the high capacitance-to-ground of the ungrounded plate. Had steps been taken to move the plate farther from ground (provide better isolation), the capacitance-to-ground would have been less and the voltage measured would have been greater. Similarly, measurements made with the test subject's standing on asbestos floor tile would have indicated greater voltages. These tests showed that conductive linoleum of the type normally used on table tops was equivalent to a metal plate for similar test conditions. A man arising from a metal chair generated considerable static charge independent of whether the chair was grounded or not. The test conditions that generated maximum voltage were those of a man sliding about on a plastic chair while wearing insulated shoes. Therefore, these are the conditions used for discussing the relative merits of the different garments, although the relative voltage levels measured amongst the test garments remain the same for the other test conditions.

Voltages monitored for the various test samples at 19% relative humidity, measured with the electrometer, are shown in app H. These data show that Nomex fabrics woven with metal fibers (both Riegelsat F4X and Nomex SS) are slightly superior to the untreated cotton; other data found in appendix B show that the untreated cotton generates up to 12,000 volts. Cotton with flameproofing is slightly superior to the others, with the older cotton garment being best. Data on similar tests at 35 to 39% relative humidity are presented in appendix B which also shows all voltage levels to be reduced approximately one order of magnitude due to the increased humidity. The average voltage levels for all of the Nomex-plus-metal-fiber materials is approximately equal to the average value of the cotton without flameproofing. However, the cotton with flameproofing is decidedly superior at the higher levels of humidity.

Elecrostatic hand discharge voltage test data on test garments before washing and after 10 washings are shown in appendix H. The cotton garments were treated with flameproofing chemicals after each washing as is the normal custom. The object of this effort

was to determine whether the desirable properties of garments made from Nomex with metal fibers deteriorated after extensive washing. The cotton garments were used as a control.

The cotton garments without flameproofing decreased considerably in static-charge-generating propensity (app H). This is consistent with previous test data for cotton garments with added flameproofing chemicals as compared with new untreated cotton garments. The voltage level measured for the Nomex-with-metal-fiber garments also decreased dramatically following washing. These results for the Nomex with metal fibers were not considered consistent with theory. The expectation was that the static charge propensity of the Nomex with metal fibers was expected to remain the same at best and, if there were mechanical deterioration of the metal fibers, the voltage levels were expected to increase. It is suspected that the decrease in voltage levels occurred during handling in the laundry room by inadvertent contamination from the flameproofing used for the cotton. These data, therefore, do not provide the required information concerning the effect of many washings of the Nomex with metal fibers.

Carefully controlled, standard wash tests are recommended to evaluate possible change in static charge propensity of Nomex with metal fibers. To avoid postponing use of this material, spot checks should be performed on a man wearing a garment of this material, after each actual use, and after extended washings to assure that physical deterioration due to washing has not created a static charge problem.

The techniques for monitoring electrostatic voltages as presented in this report, do not record possible transient voltage levels that could be considerably higher than the steady state levels monitored. If these high level voltages exist under certain circumstances, they should be ascertained inasmuch as dangerous detonation of explosives, presently unpredictable, could occur.

One could represent a condition where a man, sitting in a chair and wearing conductive shoes, could generate a high voltage. However, on arising from the chair and stepping on a conductive floor, he could decrease the voltage to a safe level. Under these circumstances, if the man touched a detonator as he was arising from the chair (while at his peak voltage level), he could deliver sufficient voltage and energy to fire the detonator. The charging time constant is much less than the discharge time constant. This phenomenon might explain the reason for some explosions, the causes of which are presently unknown. Therefore, transient-type tests to evaluate this effect are recommended.

## Relative Resistivity Measurements of the Garment Fabrics

Relative resistivity measurements recorded on the various garment materials are presented in appendix C. These data do not allow one to predict the static charge propensity of Nomex with metal fibers as compared to cotton. Although the Nomex with metal fibers showed very low relative resistivity as compared to cotton, the static charge generated was comparable. The reason for this apparent discrepancy is believed to be the inhomogeneity of the Nomex-with-metal-fiber material because a low percentage of metal fibers may not completely neutralize the charge generated in the high resistance Nomex threads, but yet show low resistance in direct readings. It is possible, however, to develop a relationship for a homogeneous material, such as pure cotton, between resistivity and static charge-generating propensity, although additional work is required to make this relationship more definitive.

# CONCLUSIONS

1. At relative humidity levels of 19% to 39%, an explosives handler, standing on a conductive floor, will generate the same static charge voltage levels when wearing coveralls made of Nomex SS as he would if he were wearing flameproof-treated coveralls.

2. To minimize static charge voltage buildup, an explosives handler should work on a conductive floor, and should wear conductive shoes and a coverall, rather than a work coat which would expose his pant legs. Under these conditions, garments worn under the coveralls, including underwear, will not adversely affect static charge energy generated by the man to his environment.

3. Observations showed that at the relative humidity levels tested, a man wearing insulated shoes will generate lower electrostatic voltage levels if he is wearing a flameproof-treated cotton garment, rather than an untreated cotton or Nomex-with-metal-fibers garment (either Riegelsat F4X or Nomex SS).

4. Even if a man is wearing conductive shoes and a knee-length work coat made of Nomex with metal fibers, the voltage levels on the portion of his pants exposed beneath his knees could generate dangerous levels of voltage.

5. Data obtained on the performance of Nomex with metal fibers after washing are questionable because of suspected inadvertent contamination. These tests should be rerun.

6. Where test conditions include insulated shoes or insulated floor, static charge voltages induced on garments increase in magnitude when the ambient relative humidity is decreased from 39% to 19%. Relative humidity as low as 5% can exist in a loading area under extreme conditions; tests should be performed at low humidities on both Nomex with metal fibers and on cotton to evaluate potential hazards.

7. Under special circumstances, transient static-charge-induced voltages of very high levels, not recorded with normal measurement techniques, may present a safety hazard.

## RECOMMENDATIONS

1. Coveralls made from Nomex with 1% metal fibers may safely be used as uniforms for explosives handlers providing conditions include conductive floor and conductive shoes. Additional elecrostatic tests should be performed on Nomex with metal fibers after washing. In the interim, static charge gun tests should be performed on garments of this material in use after washing.

2. It is not necessary to control the clothing the explosives handler wears under his coveralls providing the conditions described above are met.

3. Additional tests are recommended to evaluate static-charge-induced voltages on both Nomex with metal fibers and on cotton at low temperatures and low relative humidities.

4. Static charge tests should be performed to evaluate the safety hazards from possible large amplitude transient voltages generated during the charging process even where conductive shoes are worn.

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APPENDIX A

TEST PLAN FOR EVALUATION OF ELECTROSTATIC PROPENSITY OF VARIOUS FABRICS

## TEST PLAN FOR EVALUATION OF ELECTROSTATIC PROPENSITY OF VARIOUS FABRICS

by

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Evaluation Branch, ID, TSD

MAY 1974

### OBJECTIVE

The Evaluation Branch, Instrumentation Division, Technical Support Directorate was requested by Messrs W. Field and B. Perlmutter of Methods Engineering Division and Mr. J. Lippian of the Safety Office, to prepare a test plan to compare the electrostatic properties of various garments to determine if they can be safely worn by explosive handlers and visitors to explosive areas. The following materials are to be tested:

a. Sager Glove Company, shirt, 100% Cotton-Roxel (washable fire retardant treatment)

b. Sager Glove Company, trousers, 100% Cotton-Lynrus (washable fire retardant treatment)

c. Worklon Company, coveralls, 99% Nomex, 1% stainless steel fiber

d. Standard stock cotton coveralls

1. New, with flame proofing

2. New, without flame proofing

3. Old, with flame proofing

e. Workrite Uniform Company, 99% Nomex Aramid, 1% Brunsmet fiber

## BACKGROUND

### Garments Used in Explosive Environments at Picatinny Arsenal

Cotton has long been recognized as the best material for control of static electricity. This control comes about because of the material's ability to absorb moisture from the air which reduces surface resistivity (the lower the surface resistivity the less the material's propensity for storing charge). It must, however, be recognized that cotton's unique charge dissipation characteristic is associated with the moisture content of the surrounding air; below 35% relative humidity even cotton becomes material to be concerned with in the control of static electricity.

Cotton coveralls used at Picatinny Arsenal are treated with flame proofing material during one phase of the laundering cycle. There have been problems in obtaining consistancy in obtaining flame retardancy in the process. This Arsenal is considering using garments manufactured from Nomex, DuPont's flame retardant nylon. Uniforms of Nomex solve many of problems associated with flame retardant cotton; however, its reported propensity for electrostatic charging renders the material useless in an explosive environment, except where additional anti-static treatment is provided. Riegel Textile Corporation manufactures a fabric sold under the trade name Riegelstat F4X which combines a metal fiber, Brunsmet, with Nomex. This fabric is reported to have properties which compete with cotton as an anti-static fabric.

### General Discussion on Static Electricity

Although the field of electrostatics has been known for years, many of the phenomena associated with it are still not understood. This has led many authors to state that electrostatics is both a science and an art.

It is well known that when two different materials are brought in contact and then separated, equal and opposite charges are produced on each material. If one of these charged materials comes in proximity to a conductor, without touching it, free electronics are either attracted toward the charged body or repelled, depending on the polarity of the charging source. If the conductor is isolated from ground while in the presence of the charging body and is then grounded, electrons will either flow from or to earth, depending on the polarity of the charging source. Also, during the process of grounding the conductor a spark discharge often occurs.

The conductor referred to in the previous discussion is very often a human. Charging of the body can occur, for example, during the removal of clothing or when a person rises from a chair. It also occurs when a person walks across an ungrounded floor, especially if non-conductive shoes are worn. If a charged person touches a large object or ground, a spark discharge results. The most obvious danger of a spark discharge is its ability to initiate explosives or volatile gas and air mixtures. It is because of this danger that the control of static charge is of utmost importance in explosive environments.

Control of Static

The common methods used to control the generation and safe dissipation of electrostatic charge, include the use of anti-static materials or finishes, increasing the relative humidity, by ionization or by providing a low resistance path to ground for all items of equipment including flooring and footwear.

Measurement of Static Propensity

There are many schools of thought as regards to the proper way to test for static proneness. Of the many test procedures found in the literature the methods which are most used include the measurement of:

a. Surface resistivity

b. Total charge generated

c. Charge decay rate

The technical manual of The American Association of Textile Chemists and Colorists (AATCC) specifies four different tests for testing for static accumulation. Test Methods AATCC 84-1969 and 76-1969 test respectively for electrical resistivity of yarns and fabrics. Test Method AATCC 15-1969 is a fabric-to-metal cling test. Test Method AATCC 134-1969 is used to measure carpet static (human body potential is measured using an electrostatic voltmeter).

Federal test method Standard 101B, Method 4046 is used to determine the properties of materials in film and sheet form. This procedure utilizes a high voltage power supply and special fixtures to charge and discharge a test specimen. The time required to induce a charge on the surface, the intensity and polarity of the charge, and the time required for complete dissipation of the charge are measured.

A practice that has been followed by this organization is assessing electrostatic problems is to develop a test procedure based on the specific system being evaluated. In this case we are dealing with a clothing-man system. Hence, the procedures developed for the evaluation of various fabrics specified in the Objective will include in addition to evaluation of surface resistivity specific tests that reflect the real system.

## PROCEDURE

### Surface Resistivity

The measurement of resistivity will be in accordance with the AATCC test method 76-1969.

Three test specimens will be cut from each of the test materials (as received) to be evaluated. Each specimen will be conditioned in a test chamber at three different relative humidity conditions (25, 40 and 65%) at 24°C (75°F) for a period of four hours. The size of each test specimen will be selected to suit the dimensions of the electrodes of the test fixture. Resistance measurements will be made using the Kiethley 610B voltmeter.

The above tests will also be conducted after the test specimens have been washed ten times. The exact laundering process is to be specified. Cotton coveralls are presently laundered in accordance with D/M 21-7-1.1, Operation of Laundry.

### Man-Clothing Test

For this test an individual attired in the test garments, will perform specific operations which will evaluate the fabric's static propensity. These operations will include:

a. Person sliding about on a vinyl simulated leather covered metal chair and then rising from it.

b. Person sliding about on a metal chair and then rising from it.

c. Person removing garment; this will be simulated by rubbing test fabrics across the person's back and shoulders.

d. Person walking on conductive surface which is insulated.

The above tests will be conducted under the following conditions:

a. Temperature - 24°C (75°F)

b. Relative humidity - 25 and 50%

c. Floor and Chair - conductive and non-conductive

d. Footwear - conductive and non-conductive

e. Undergarments - cotton, nylon, knit polyester trousers, etc

f. Number of tests - ten for each operation

When the person completes each operation he touches a probe which connects to an electrostatic voltmeter.

TEST REPORT

Resistivity data on each test specimen will be provided. A comparison will be made between the resistivity of each specimen and the body voltage generated during each operation. From the results a material safety criteria will be developed.

# APPENDIX B

## ELECTROSTATIC PROPENSITY OF GARMENTS

INSTRUMENTATION DATA
TABULATION SHEET

| | Tested By | Garment Type | Item No. | Date 1974 | Atmosphere Temp C° | Atmosphere R.H. % | Static Charge (Volts) Gun | Voltmeter Type 610B | | | | | Shoes Insul | Shoes Cond | Shoes Other | Floor Surface Meas Made On Insul | Floor Surface Meas Made On Cond | Floor Surface Meas Made On Other | Resistance | | Type of Operation | Notes: Additional Readings (Volts) | Before Washing Tests in 832.08 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Van Sumner | Riegelstat | 1 | [illegible] | 24 | 39 | | 100 | 20 | 135 | 45 | | ✓ | | | ✓ | | | | | WALKING ON PLATE | | |
| 2 | | Coat | | | | | | 60 | 130 | 100 | 90 | | ✓ | | | | ✓ | | | | WALKING ON PLATE | | |
| 3 | | F4X | | | | | | 550 | 570 | 130 | 1.5K | 800 | ✓ | | | ✓ | | | | | PLASTIC CHAIR | | |
| 4 | | | | | | | | 150 | 220 | 50 | 350 | 670 | ✓ | | | | ✓ | | | | PLASTIC CHAIR | | |
| 5 | | | | | | | | 330 | 80 | 50 | 250 | | ✓ | | | ✓ | | | | | METAL CHAIR, GROUNDED | | |
| 6 | | | | | | | | 250 | 107 | 90 | 150 | | ✓ | | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| 7 | | | | | | | | | | | | | ✓ | | | ✓ | | | | | METAL CHAIR | | |
| 8 | | | | | | | | | | | | | ✓ | | | | ✓ | | | | METAL CHAIR | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | 9/26 | | | | 4.7 | 2 | 6 | 1.2 | 1.0 | | ✓ | | ✓ | | | | | WALKING ON PLATE | 0.9 | |
| 11 | | | | | | | | -.7 | -.8 | -.6 | -.7 | -.8 | | ✓ | | | ✓ | | | | WALKING ON PLATE | | |
| 12 | | | | | | | | 5 | 8.3 | -2 | 7 | 7.5 | | ✓ | | ✓ | | | | | PLASTIC CHAIR | | |
| 13 | | | | | | | | -.8 | -.8 | -.7 | -.8 | -.7 | | ✓ | | | ✓ | | | | PLASTIC CHAIR | | |
| 14 | | | | | | | | -5 | -6.2 | -2.3 | -2.6 | -2.7 | | ✓ | | ✓ | | | | | METAL CHAIR, GROUNDED | | |
| 15 | | | | | | | | 4 | -.7 | -.7 | -.8 | -.7 | | ✓ | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| 16 | | | | | | | | | | | | | | | | ✓ | | | | | METAL CHAIR | | |
| 17 | | | | | | | | | | | | | | | | | ✓ | | | | METAL CHAIR | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | | |
| 19 | | Riegelstat | 2 | 9/13 | 24.5 | 36 | | 92 | 38 | 58 | 10 | 37 | ✓ | | | ✓ | | | | | WALKING ON PLATE | | |
| 20 | | Coat | | | | | | 8 | 8 | 33 | 50 | 41 | ✓ | | | | ✓ | | | | WALKING ON PLATE | | |
| 21 | | F4X | | | | | | 300 | 270 | 700 | 400 | 400 | ✓ | | | ✓ | | | | | PLASTIC CHAIR | 600 | |
| 22 | | | | | | | | 150 | 330 | 550 | 600 | 550 | ✓ | | | | ✓ | | | | PLASTIC CHAIR | 130, 600 | |
| 23 | | | | | | | | 490 | 390 | 390 | | | ✓ | | | ✓ | | | | | METAL CHAIR, GROUNDED | | |
| 24 | | | | | | | | 550 | 275 | 220 | | | ✓ | | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| 25 | | | | | | | | 100 | 390 | 560 | 560 | 495 | ✓ | | | ✓ | | | | | METAL CHAIR | | |
| 26 | | | | | | | | 190 | 240 | 340 | 400 | | ✓ | | | | ✓ | | | | METAL CHAIR | | |
| 27 | | | | | | | | | | | | | | | | | | | | | | | |
| 28 | | | | 9/13 | 26 | 34 | | -11 | -9.5 | | | | | ✓ | | ✓ | | | | | WALKING ON PLATE | | |
| 29 | | | | | | | | -2.5 | | | | | | ✓ | | | ✓ | | | | WALKING ON PLATE | | |
| 30 | | | | | | | | 5 | | | | | | ✓ | | ✓ | | | | | PLASTIC CHAIR | | |
| 31 | | | | | | | | -.8 | -2.4 | | | | | ✓ | | | ✓ | | | | PLASTIC CHAIR | | |
| 32 | | | | | | | | | | | | | | | | ✓ | | | | | METAL CHAIR, GROUNDED | | |
| 33 | | | | | | | | | | | | | | | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| 34 | | | | | | | | -7 | | | | | | ✓ | | ✓ | | | | | METAL CHAIR | | |
| 35 | | | | | | | | | -2.4 | | | | | ✓ | | | ✓ | | | | METAL CHAIR | | |
| 36 | | | | | | | | | | | | | | | | | | | | | | | |

INSTRUMENTATION DATA
EVALUATION SHEET



| Tested By | Garment Type | Item No. | Date 1974 | Atmosphere Temp C° | R.H. % | Static Charge (Volts) Gun | Voltmeter Type 610B | | | | | Shoes Insul | Shoes Cond | Shoes Other | Floor Surface Meas Made On Insul | Cond | Other | Resistance | Type of Operation | Notes: Additional Readings (Volts) Before Washing Tests in B3208 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Van Sawee | Riegelstat | 3 | 9/23 | 23.3 | 37.5 | | 15 | 20 | 19 | | | ✓ | | | ✓ | | | | WALKING ON PLATE | |
| | Coat | | | | | | 8 | 34 | 42 | 7 | 5 | ✓ | | | | ✓ | | | WALKING ON PLATE | |
| | F4X | | | | | | 500 | 330 | 1K | 845 | | ✓ | | | ✓ | | | | PLASTIC CHAIR | |
| | | | | | | | 1K | 350 | 450 | 930 | | ✓ | | | | ✓ | | | PLASTIC CHAIR | |
| | | | | | | | 220 | 300 | 390 | | | ✓ | | | ✓ | | | | METAL CHAIR, GROUNDED | |
| | | | | | | | 550 | 300 | 350 | | | ✓ | | | | ✓ | | | METAL CHAIR, GROUNDED | |
| | | | | | | | 270 | 300 | 1K | 440 | | ✓ | | | ✓ | | | | METAL CHAIR | |
| | | | | | | | 450 | 180 | 420 | 290 | | ✓ | | | | ✓ | | | METAL CHAIR | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | 9/18 | 23.3 | 35 | | -.8 | | | | | | ✓ | | ✓ | | | | WALKING ON PLATE | |
| | | | | | | | 1.7 | | | | | | ✓ | | | ✓ | | | WALKING ON PLATE | |
| | | | | | | | 2.6 | | | | | | ✓ | | ✓ | | | | PLASTIC CHAIR | |
| | | | | | | | -.8 | | | | | | ✓ | | | ✓ | | | PLASTIC CHAIR | |
| | | | | | | | | | | | | | | | ✓ | | | | METAL CHAIR, GROUNDED | |
| | | | | | | | | | | | | | | | | ✓ | | | METAL CHAIR, GROUNDED | |
| | | | | | | | 5 | | | | | | ✓ | | ✓ | | | | METAL CHAIR | |
| | | | | | | | -.8 | | | | | | ✓ | | | ✓ | | | METAL CHAIR | |
| | | | | | | | | | | | | | | | | | | | | |
| | Riegelstat | A | 9/24 | 23.3 | 38 | | -39 | 46 | -5 | 31 | | ✓ | | | ✓ | | | | WALKING ON PLATE | |
| | Coat | | | | | | -13 | 55 | 48 | 57 | | ✓ | | | | ✓ | | | WALKING ON PLATE | |
| | F4X | | | | | | 520 | 650 | 350 | 250 | | ✓ | | | ✓ | | | | PLASTIC CHAIR | |
| | | | | | | | 520 | 1K | 1.6K | 1.3K | | ✓ | | | | ✓ | | | PLASTIC CHAIR | |
| | | | | | | | 50 | 30 | 40 | 130 | | ✓ | | | ✓ | | | | METAL CHAIR, GROUNDED | |
| | | | | | | | 180 | 115 | 260 | 210 | | ✓ | | | | ✓ | | | METAL CHAIR, GROUNDED | |
| | | | | | | | 130 | 20 | -50 | 380 | | ✓ | | | ✓ | | | | METAL CHAIR | |
| | | | | | | | 440 | -110 | -30 | 15 | 110 | ✓ | | | | ✓ | | | METAL CHAIR | |
| | | | | | | | | | | | | | | | | | | | | |
| | | | 9/24 | 22.8 | 39 | | 2.2 | 2.8 | -0.8 | 1.4 | | | ✓ | | ✓ | | | | WALKING ON PLATE | |
| | | | | | | | -.8 | -.8 | -.8 | -.8 | | | ✓ | | | ✓ | | | WALKING ON PLATE | |
| | | | | | | | 11.5 | -3 | 11.5 | 11.5 | -5 | | ✓ | | ✓ | | | | PLASTIC CHAIR | |
| | | | | | | | -.8 | -.8 | -.8 | -.8 | | | ✓ | | | ✓ | | | PLASTIC CHAIR | |
| | | | | | | | 1.7 | .9 | .6 | -1.4 | | | ✓ | | ✓ | | | | METAL CHAIR, GROUNDED | |
| | | | | | | | -.8 | -.8 | -.8 | -.8 | | | ✓ | | | ✓ | | | METAL CHAIR, GROUNDED | |
| | | | | | | | 93 | -3 | -8 | -.2 | | | ✓ | | ✓ | | | | METAL CHAIR | |
| | | | | | | | -.8 | -.8 | -.8 | -.8 | | | ✓ | | | ✓ | | | METAL CHAIR | |

INSTRUMENTATION DATA
TABULATION SHEET

| Tested By | Garment Type | Item No. | Date 1974 | Atmosphere C° Temp | Atmosphere % R.H. | Static Charge (Volts) Gun | Voltmeter Type CIOB | | | | | Shoes Insul | Shoes Cond | Shoes Other | Floor Surface Meas Made On Insul | #7 CCW | Other | Resistance | Type of Operation | Notes: Additional Readings (Volts) | Before Washing Tests in B320B |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Van Savage | NOMEX 99% | B | 9/16/74 | 22.2 | 36 | | -40 | 17 | 39 | -50 | -31 | ✓ | | | ✓ | | | | WALKING ON PLATE | | |
| | COVERALLS | | | | | | -46 | -50 | 33 | 30 | -16 | ✓ | | | | ✓ | | | WALKING ON PLATE | | |
| | 1% S.S. | | | | | | 110 | 550 | 300 | 500 | | ✓ | | | ✓ | | | | PLASTIC CHAIR | | |
| | WORKLON | | | | | | 600 | 750 | 730 | 300 | 1.6K | ✓ | | | | ✓ | | | PLASTIC CHAIR | | |
| | | | | | | | 600 | 330 | 100 | 200 | | ✓ | | | ✓ | | | | METAL CHAIR | | |
| | | | | | | | 520 | 600 | 630 | 300 | 250 | ✓ | | | | ✓ | | | METAL CHAIR | | |
| | | | | | | | 570 | 600 | 680 | | | ✓ | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| | | | | | | | 550 | 800 | 700 | | | ✓ | | | | ✓ | | | METAL CHAIR, GROUNDED | | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | -1.4 | | | | | | ✓ | | ✓ | | | | WALKING ON PLATE | | |
| | | | | | | | -.8 | | | | | | ✓ | | | ✓ | | | WALKING ON PLATE | | |
| | | | | | | | 1.5 | | | | | | ✓ | | ✓ | | | | PLASTIC CHAIR | | |
| | | | | | | | -.6 | | | | | | ✓ | | | ✓ | | | PLASTIC CHAIR | | |
| | | | | | | | | | | | | | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| | | | | | | | | | | | | | | | | ✓ | | | METAL CHAIR, GROUNDED | | |
| | | | | | | | -3.4 | | | | | | ✓ | | ✓ | | | | METAL CHAIR | | |
| | | | | | | | -.7 | | | | | | ✓ | | | ✓ | | | METAL CHAIR | | |
| | | | | | | | | | | | | | | | | | | | | | |
| Van Savage | Cotton | C | 9/16/74 | 25 | 37 | | -38 | -14 | -19 | 14 | -34 | ✓ | | | ✓ | | | | WALKING ON PLATE | | |
| | COVERALLS | | 9/24/74 | | | | -36 | -36 | -10 | -8 | -18 | ✓ | | | | ✓ | | | WALKING ON PLATE | | |
| | NEW, No | | | | | | 400 | 470 | 370 | 580 | 350 | ✓ | | | ✓ | | | | PLASTIC CHAIR | 580 | |
| | FLAME Proof | | | | | | 180 | 350 | 1.02K | 450 | 450 | ✓ | | | | ✓ | | | PLASTIC CHAIR | | |
| | | | | | | | 650 | 350 | 800 | | | ✓ | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| | | | | | | | 700 | 1K | 1.1K | | | ✓ | | | | ✓ | | | METAL CHAIR, GROUNDED | | |
| | | | | | | | 680 | 500 | 450 | 150 | 600 | ✓ | | | ✓ | | | | METAL CHAIR | | |
| | | | | | | | 600 | 600 | 1.38K | 1.9K | 500 | ✓ | | | | ✓ | | | METAL CHAIR | 495 | |
| | | | | | | | | | | | | | | | | | | | | | |
| | | | 9/16/74 | 21 | 38 | | 3 | -1 | | | | | ✓ | | ✓ | | | | WALKING ON PLATE | | |
| | | | | | | | -.8 | | | | | | ✓ | | | ✓ | | | WALKING ON PLATE | | |
| | | | | | | | 1.9 | | | | | | ✓ | | ✓ | | | | PLASTIC CHAIR | | |
| | | | | | | | -.8 | | | | | | ✓ | | | ✓ | | | PLASTIC CHAIR | | |
| | | | | | | | | | | | | | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| | | | | | | | | | | | | | | | | ✓ | | | METAL CHAIR, GROUNDED | | |
| | | | | | | | -.8 | | | | | | ✓ | | ✓ | | | | METAL CHAIR | | |
| | | | | | | | -.8 | | | | | | ✓ | | | ✓ | | | METAL CHAIR | | |

INSTRUMENTATION DATA
TABULATION SHEET

| | Tested By | Garment Type | Item No. | Date 1974 | Atmospheric Temp C° | Atmospheric R.H. % | Static Charge (Volts) Gun | Voltmeter Type 610B | | | | | Shoes Insul | Shoes Cond | Shoes Other | Floor Surface Meas Made On Insul | Floor Surface Cond | Floor Surface Other | Resistance | Type of Operation | Notes: Additional readings (Volts) | Before washing tests in B3208 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VanSumner | COTTON | D | [illegible] | 23.3 | 38 | | -70 | -20 | 35 | 80 | | ✓ | | | ✓ | | | | WALKING ON PLATE | | |
| 2 | | COVERALLS | | | | | | -70 | 10 | 80 | 100 | | ✓ | | | | ✓ | | | WALKING ON PLATE | | |
| 3 | | NEW, WITH | | | | | | -50 | -100 | -50 | | | ✓ | | | ✓ | | | | PLASTIC CHAIR | | |
| 4 | | FLAME | | | | | | 100 | -400 | -120 | -120 | -60 | ✓ | | | | ✓ | | | PLASTIC CHAIR | | |
| 5 | | PROOF | | | | | | 20 | 45 | 45 | | | ✓ | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| 6 | | | | | | | | -40 | -10 | +22 | +30 | +30 | ✓ | | | | ✓ | | | METAL CHAIR, GROUNDED | +32 | |
| 7 | | | | | | | | 14 | 30 | 5 | 40 | | ✓ | | | ✓ | | | | METAL CHAIR | | |
| 8 | | | | | | | | 100 | 75 | 0 | | | ✓ | | | | ✓ | | | METAL CHAIR | | |
| 9 | | | | | | | | | | | | | | | | | | | | | | |
| 10 | | | | | | | | -2.8 | | | | | | ✓ | | ✓ | | | | WALKING ON PLATE | | |
| 11 | | | | | | | | -.8 | | | | | | ✓ | | | ✓ | | | WALKING ON PLATE | | |
| 12 | | | | | | | | 3 | | | | | | ✓ | | ✓ | | | | PLASTIC CHAIR | | |
| 13 | | | | | | | | -.7 | | | | | | ✓ | | | ✓ | | | PLASTIC CHAIR | | |
| 14 | | | | | | | | | | | | | | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| 15 | | | | | | | | | | | | | | | | | ✓ | | | METAL CHAIR, GROUNDED | | |
| 16 | | | | | | | | .6 | | | | | | ✓ | | ✓ | | | | METAL CHAIR | | |
| 17 | | | | | | | | -.8 | | | | | | ✓ | | | ✓ | | | METAL CHAIR | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | |
| 19 | VanSumner | COTTON | E | 9/28/74 | 24.5 | 37 | | 30 | -25 | -36 | -5 | 5 | ✓ | | | ✓ | | | | WALKING ON PLATE | 57, -61 | |
| 20 | | COVERALLS | | 9/12/74 | | | | -14 | -28 | -17 | 10 | 30 | ✓ | | | | ✓ | | | WALKING ON PLATE | | |
| 21 | | OLD, WITH | | | | | | 80 | 52 | 120 | 160 | 100 | ✓ | | | ✓ | | | | PLASTIC CHAIR | 50, 140 | |
| 22 | | FLAME | | | | | | 150 | 94 | 320 | 560 | 400 | ✓ | | | | ✓ | | | PLASTIC CHAIR | -140, 390 | |
| 23 | | PROOF | | | | | | -15 | -28 | -31 | -22 | | ✓ | | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| 24 | | | | | | | | -100 | -30 | -40 | -60 | | ✓ | | | | ✓ | | | METAL CHAIR, GROUNDED | | |
| 25 | | | | | | | | 130 | -8 | -8 | 2 | -12 | ✓ | | | ✓ | | | | METAL CHAIR | -20 | |
| 26 | | | | | | | | 40 | -15 | -2 | -8 | -4 | ✓ | | | | ✓ | | | METAL CHAIR | -6 | |
| 27 | | | | | | | | | | | | | | | | | | | | | | |
| 28 | | | | | 24 | 38 | | -13 | | | | | | ✓ | | ✓ | | | | WALKING ON PLATE | | |
| 29 | | | | | | | | -2.4 | | | | | | ✓ | | | ✓ | | | WALKING ON PLATE | | |
| 30 | | | | | | | | 10 | | | | | | ✓ | | ✓ | | | | PLASTIC CHAIR | | |
| 31 | | | | | | | | -2.4 | | | | | | ✓ | | | ✓ | | | PLASTIC CHAIR | | |
| 32 | | | | | | | | -8 | | | | | | ✓ | | ✓ | | | | METAL CHAIR, GROUNDED | | |
| 33 | | | | | | | | -15 | | | | | | ✓ | | | ✓ | | | METAL CHAIR, GROUNDED | | |
| 34 | | | | | | | | -7 | | | | | | ✓ | | ✓ | | | | METAL CHAIR | | |
| 35 | | | | | | | | -2.4 | | | | | | ✓ | | | ✓ | | | METAL CHAIR | | |
| 36 | | | | | | | | | | | | | | | | | | | | | | |

INSTRUMENTATION DATA
TABULATION SHEET

| Tested By | Garment Type | Item No. | Date 1974 | Atmosphere C° Temp | Atmosphere % RH | Gun Trouser | Gun Garment | Hand Discharge Electrometer Type 610B | | | | | Shoes Insul | Shoes Cond | Meas. Made On Insul | Meas. Made On Cond | Type of Operation | Notes: Additional Readings (Volts) | Before Washing Tests in B3109 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VanSumner | Riegelstat | | | | | | 0 | -36 | -40 | -32 | -15 | -30 | ✓ | | ✓ | | WALKING ON PLATE | | |
| | Coat F4X | 1 | 9/30 | 21 | 19 | | | -30 | -120 | +50 | +50 | | ✓ | | | ✓ | WALKING ON PLATE | | |
| | Workrite | | | | | | 8K 8K | 3K | 7.5K | 7.5K | | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| | | | | | | | 4.5K 4.5K | 8K | 8.5K | 3.7K | 8K | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| | | | | | | | 0 | 350 | 300 | 200 | | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| | | | | | | | 0 | 350 | 430 | 300 | | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 0 | 1.5 | 1.0 | 2.0 | | | | ✓ | ✓ | | WALKING ON PLATE | | |
| | | | | | | | 0 | -.8 | -.8 | | | | | ✓ | | ✓ | WALKING ON PLATE | | |
| | | | | | | | | 37 | 70 | 70 | 55 | | | ✓ | ✓ | | PLASTIC CHAIR | | |
| | | | | | | | 0 | -.8 | -.8 | | | | | ✓ | | ✓ | PLASTIC CHAIR | | |
| | | | | | | | | 4.0 | 4.5 | 11.0 | 2.0 | | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| | | | | | | | | -.8 | -.8 | -.8 | | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| | | | | | | | | | | | | | | | | | | | |
| VanSumner | Riegelstat | 2 | 9/30 | 21 | 19 | | 0 | 40 | -18 | -14 | | | ✓ | | ✓ | | WALKING ON PLATE | | |
| | Coat F4X | | | | | | 0 | 38 | 30 | 50 | | | ✓ | | | ✓ | WALKING ON PLATE | | |
| | Workrite | | | | | | 5K 5K | 5.5K | 6K | 5.2K | | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| | | | | | | | 2K 2K | 2.8K | 6K | 6K | 5.5K | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| | | | | | | | 0 | 500 | 750 | 530 | | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| | | | | | | | 0 | 530 | 600 | 750 | | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| | | | | | | | | | | | | | | | | | | | |
| | | | | | | | 0 | -.8 | -1.5 | -.8 | | | | ✓ | ✓ | | WALKING ON PLATE | | |
| | | | | | | | 0 | 100 | 70 | 50 | 60 | | | ✓ | | ✓ | WALKING ON PLATE | | |
| | | | | | | | 0 | -6 | 3 | 15 | 85 | | | ✓ | ✓ | | PLASTIC CHAIR | | |
| | | | | | | | 0 | -.8 | -.8 | -.8 | | | | ✓ | | ✓ | PLASTIC CHAIR | | |
| | | | | | | | 0 | 10 | 22 | 28 | | | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| | | | | | | | 0 | -.8 | -.8 | -.8 | | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |

INSTRUMENTATION DATA
TABULATION SHEET

| | Tested By | Garment Type | Garment Item No. | Date 1974 | Atmosphere C° Temp | Atmosphere % RH | Static Charge (Volts) Gun Trouser | Static Charge (Volts) Gun Garment | Static Charge (Volts) Hand Discharge Electrometer Type 610B | Shoes Insul | Shoes Cond | Meas. Made On Insul | Meas. Made On Cond | Type of Operation | Notes: Additional Readings (Volts) | Notes: Before Washing Tests in B3'04 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Van Savage | Riegelstat | A | 10/1 | 21.1 | 19 | -10K | 0 | 55 100 100 160 95 | ✓ | | ✓ | | WALKING ON PLATE | | |
| 2 | | Coat, F4X | | | | | -2K | 0 | -390 +200 65 200 290 | ✓ | | | ✓ | WALKING ON PLATE | | |
| 3 | | Workrite | | | | | -3K -2K | 5K 5K | 5.5K 6.5K 7.8K | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 4 | | | | | | | -1K | 4K | 8.8K 6.7K 7.3K | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 5 | | | | | | | -5K | 0.5K | 960 1220 1.1K | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 6 | | | | | | | -4K -4K | 0.5K .5K | 930 920 930 | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 7 | | | | | | | | | | | | | | | | |
| 8 | | | | | | | -4K | 0 | 23 -3 -12 2 | | ✓ | ✓ | | WALKING ON PLATE | | |
| 9 | | | | | | | -5K | 0 | -2 0 0 | | ✓ | | ✓ | WALKING ON PLATE | | |
| 10 | | | | | | | -5K -9K | 0 0 | 70 120 100 160 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 11 | | | | | | | -5K | 0 | -.8 -.8 -.8 | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 12 | | | | | | | -5K | 0 | 20 12 20 | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 13 | | | | | | | -5K | 0 | -.8 -.8 -.8 | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| 14 | | | | | | | | | | | | | | | | |
| 15 | Van Savage | Coveralls | B | 9/30 | 21.1 | 19 | | 0 | 260 80 120 130 | ✓ | | ✓ | | WALKING ON PLATE | | |
| 16 | | 99% Nomex | | | | | | 0 | -33 28 72 52 | ✓ | | | ✓ | WALKING ON PLATE | | |
| 17 | | 1% SS | | | | | | 5K | 6K 7.2K 7.8K | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 18 | | Worklon | | | | | | 3K 4K | 7.9K 3K 5K | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 19 | | | | | | | | 250 500 | 850 950 1K | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 20 | | | | | | | | 500 | 950 850 100 | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 21 | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | 0 | 1.6 .8 .8 | | ✓ | ✓ | | WALKING ON PLATE | | |
| 23 | | | | | | | | 0 | -.8 -.8 -.8 | | ✓ | | ✓ | WALKING ON PLATE | | |
| 24 | | | | | | | | 0 | 50 98 100 76 97 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 25 | | | | | | | | 0 | -.8 -.8 -.8 | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 26 | | | | | | | | 0 | 19 12 15 | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 27 | | | | | | | | 0 | -.8 -.8 -.8 | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| 28 | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | |
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| 35 | | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | | |

INSTRUMENTATION DATA
TABULATION SHEET

| | Tested By | Garment Type | Garment Item No. | Date 1974 | Atmosphere C° Temp | Atmosphere % RH | Static Charge (Volts) Gun Trouser | Gun Garment | Hand Discharge Electrometer Type 610B | | | | | Shoes Insul | Shoes Cond | Meas. Made On Insul | Meas. Made On Cond | Type of Operation | Notes: Additional Readings (Volts) | Before Washing Tests in B3'09 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Van Savage | Cotton | C | 9/30 | 21.1 | 19 | | 0 | -200 | -550 | -1K | -650 | -800 | ✓ | | ✓ | | WALKING ON PLATE | | |
| 2 | | Coveralls | | | | | | 0 | -220 | -160 | -160 | | | ✓ | | | ✓ | WALKING ON PLATE | | |
| 3 | | New, No | | | | | | 5K | 6K | 6.7K | 8.2K | 9K | 6.5K | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 4 | | Flame Proof | | | | | | 10K | 6K | 4.5K | 10K | 12K | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 5 | | | | | | | | 2K | 1.8K | 3.4K | 2.7K | 2.6K | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 6 | | | | | | | | 5K 2K | 2.5K | 4.0K | 3.4K | 2.8K | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 7 | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | 0 | 17 | .5 | 1.0 | 1.8 | | | ✓ | ✓ | | WALKING ON PLATE | | |
| 9 | | | | | | | | 0 | -.8 | -.8 | -.8 | | | | ✓ | | ✓ | WALKING ON PLATE | | |
| 10 | | | | | | | | 0 | 92 | 110 | 140 | 100 | 180 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 11 | | | | | | | | 0 | -.8 | -.8 | -.8 | | | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 12 | | | | | | | | 0 | 61 | 60 | 64 | | | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 13 | | | | | | | | 0 | | -1 | -.8 | -.8 | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| 14 | | | | | | | | | | | | | | | | | | | | |
| 15 | Van Savage | Cotton | D | 9/30 | 21.1 | 19 | | 0 | 32 | 110 | 100 | 180 | 180 | ✓ | | ✓ | | WALKING ON PLATE | | |
| 16 | | Coveralls | | | | | | 500 | 3K | 1.1K | 1K | | | ✓ | | | ✓ | WALKING ON PLATE | | |
| 17 | | New, With | | | | | | 5K 5K | 6.5K | 7K | 3.8K | 5.7K | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 18 | | Flame Proof | | | | | | 5K 5K | 3.7K | 5K | 5K | | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 19 | | | | | | | | 0 | 550 | 650 | 550 | | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 20 | | | | | | | | 0 | 250 | 300 | 450 | | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 21 | | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | 0 | .8 | 10.5 | 7 | 3.5 | | | ✓ | ✓ | | WALKING ON PLATE | | |
| 23 | | | | | | | | 0 | -.8 | -.8 | -.8 | | | | ✓ | | ✓ | WALKING ON PLATE | | |
| 24 | | | | | | | | 0 | 45 | 42 | 76 | 98 | 57 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 25 | | | | | | | | 0 | -.8 | -.8 | -.8 | | | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 26 | | | | | | | | 0 | 22 | 20 | 25 | 19 | | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 27 | | | | | | | | 0 | -.8 | -.8 | -.8 | | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| 28 | | | | | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | | |
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| 37 | | | | | | | | | | | | | | | | | | | | |

INSTRUMENTATION DATA
TABULATION SHEET

| | Tested By | Garment Type | Garment Item No | Date 1977 | Atmosphere Temp C° | Atmosphere % RH | Static Charge (Volts) Gun Trouser | Gun Garment | Hand Discharge Electrometer Type 610B | | | | Shoes Insul | Shoes Cond | Meas. Made On Insul | Meas. Made On Cond | Type of Operation | Notes: Additional Readings (Volts) Before Washing Tests in B-109 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VanSangen | Cotton | E | 10/1 | 21.1 | 19 | 0 | 0 | 500 | 550 | 140 | 100 | ✓ | | ✓ | | WALKING ON PLATE | |
| 2 | | Coveralls | | | | | 0 | 0 | 70 | 100 | 100 | | ✓ | | | ✓ | WALKING ON PLATE | |
| 3 | | Old, With | | | | | 4k | 4k | 5K | 4.8K | 4.2K | | ✓ | | ✓ | | PLASTIC CHAIR | |
| 4 | | Flame Proof | | | | | 4k | 4k | 4K | 4K | 5.2K | | ✓ | | | ✓ | PLASTIC CHAIR | |
| 5 | | | | | | | 0 | 0 | 60 | 380 | 260 | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | |
| 6 | | | | | | | 0 | 0 | 600 | 600 | 50 | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | |
| 7 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | 0 | 0 | 5 | 5 | 4 | | | ✓ | ✓ | | WALKING ON PLATE | |
| 9 | | | | | | | 0 | 0 | 0 | 0 | 0 | | | ✓ | | ✓ | WALKING ON PLATE | |
| 10 | | | | | | | 0 | 0 | 100 | 130 | 60 | 65 | | ✓ | ✓ | | PLASTIC CHAIR | |
| 11 | | | | | | | 0 | 0 | 0 | 0 | 0 | | | ✓ | | ✓ | PLASTIC CHAIR | |
| 12 | | | | | | | 0 | 0 | 5 | 9 | 11 | | | ✓ | ✓ | | METAL CHAIR, GROUNDED | |
| 13 | | | | | | | 0 | C | -.8 | -.8 | -.8 | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | |
| 14 | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | WALKING ON PLATE | |
| 16 | | | | | | | | | | | | | | | | | WALKING ON PLATE | |
| 17 | | | | | | | | | | | | | | | | | PLASTIC CHAIR | |
| 18 | | | | | | | | | | | | | | | | | PLASTIC CHAIR | |
| 19 | | | | | | | | | | | | | | | | | METAL CHAIR, GROUNDED | |
| 20 | | | | | | | | | | | | | | | | | METAL CHAIR, GROUNDED | |
| 21 | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | WALKING ON PLATE | |
| 23 | | | | | | | | | | | | | | | | | WALKING ON PLATE | |
| 24 | | | | | | | | | | | | | | | | | PLASTIC CHAIR | |
| 25 | | | | | | | | | | | | | | | | | PLASTIC CHAIR | |
| 26 | | | | | | | | | | | | | | | | | METAL CHAIR, GROUNDED | |
| 27 | | | | | | | | | | | | | | | | | METAL CHAIR, GROUNDED | |
| 28 | | | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | |
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| 37 | | | | | | | | | | | | | | | | | | |

[illegible] DATA

TABULATION SHEET

| Tested By | Garment Type | Item No. | Date 1974 | Atmosphere Temp C° | Atmosphere % RH | Static Charge (Volts) Gun Trouser | Gun | Garment | Hand Discharge Electrometer Type 610B | | | | Shoes Insul | Shoes Cond | Meas. Made On Insul | Meas. Made On Cond | Type of Operation | Notes: Additional Readings (Volts) | Before Washing Tests in [illegible] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| VanSounce | Riegelstat | A | 10/1 | 21.1 | 19 | | | | | | | | ✓ | | ✓ | | WALKING ON PLATE | | |
| | Coat, F4X | | | | | | | | | | | | ✓ | | | ✓ | WALKING ON PLATE | | |
| | Workrite | | | | | | | 5K | 6.8K | 8.3K | 8K | | ✓ | | ✓ | | PLASTIC CHAIR | | PANTS OFF |
| | | | | | | | | 5K | 6.4K | 7.0K | 6.5K | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| | | | | | | | | 900 200 | 230 | 520 | 450 | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| | | | | | | | | 250 | 500 | 520 | | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| | | | | | | | | | | | | | | | | | | | PANTS OFF |
| VanSounce | Coveralls | B | 10/1 | 21.1 | 19 | 5K | | 4K | 7.5K | | | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| | 99% Nomex | | | . | | 4.5K | | 4.5K | 6.9K | | | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| | 1% SS | | | . | | -500 | 0 | 90 | 110 | | | | | ✓ | ✓ | | PLASTIC CHAIR | | |
| | Workllon | | | | | 0 | 0 | 0 | 0 | | | | | ✓ | | ✓ | PLASTIC CHAIR | | |

DOCUMENTATION DATA
TABULATION SHEET

SPECIAL TEST - BLACK CONDUCTIVE LINOLEUM

| No. | Tested By | Garment Type | Item No. | Date 1974 | Atmosphere Temp C° | R.H. | Static Charge (Volts) Gun | Voltmeter Type 610B | | | | | Shoes Insul | Shoes Cond | Shoes Other | Floor Surface Meas Made On Insul | Cond | Other | Resistance | | Type of Operation: Tests performed in Bldg. 3208 | Notes: Prior to 10 washings 83208 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Van Sommer | Riegelstak | 2 | 10/2 | 22.8 | 27 | | 200 | 100 | -220 | 0 | | ✓ | | | ✓ | | | | | WALKING ON LINOLEUM | All measurements were made on black |
| 2 | | Coat Fyr | | | | | | 250 | -340 | 0 | | | ✓ | | | | ✓ | | | | WALKING ON LINOLEUM | conductive linoleum which was either |
| 3 | | | | | | | | 200 | -140 | 60 | | | ✓ | | | ✓ | | | | | WALKING ON ASBESTOS FLOOR | grounded or ungrounded (insulated). |
| 4 | | | | | | | | -130 | -240 | 70 | | | ✓ | | | | ✓ | | | | WALKING ON ASBESTOS FLOOR | |
| 5 | | | | | | | | 2.9K | 3K | 3K | | | ✓ | | | ✓ | | | | | PLASTIC CHAIR | First reading was 9 kV. |
| 6 | | | | | | | | 2.6K | 700 | -700 | | | ✓ | | | | ✓ | | | | PLASTIC CHAIR | |
| 7 | | | | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | | | | | | | |
| 9 | | | | | | | | -4.2 | -3.9 | | | | | ✓ | | ✓ | | | | | WALKING ON LINOLEUM | |
| 10 | | | | | | | | .8 | -.8 | | | | | ✓ | | | ✓ | | | | WALKING ON LINOLEUM | |
| 11 | | | | | | | | -3.1 | -4.6 | | | | | ✓ | | ✓ | | | | | WALKING ON ASBESTOS FLOOR | |
| 12 | | | | | | | | -2.3 | -2.3 | | | | | ✓ | | | ✓ | | | | WALKING ON ASBESTOS FLOOR | |
| 13 | | | | | | | | 2 | 7 | 12 | | | | ✓ | | ✓ | | | | | PLASTIC CHAIR | |
| 14 | | | | | | | | 6.5 | 4.5 | | | | | ✓ | | | ✓ | | | | PLASTIC CHAIR | |
| 15 | | | | | | | | | | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | | | |
| 18 | | | | | | | | | | | | | | | | | | | | | | |
| 19 | Van Sommer | Cotton | C | 10/2 | 22.8 | 27 | | -30 to +32 | | -60 | -44 | | | ✓ | | ✓ | | | | | WALKING ON LINOLEUM | |
| 20 | | Coveralls | | | | | | -32 to +42 | | -90 | -35 | | | ✓ | | | ✓ | | | | WALKING ON LINOLEUM | |
| 21 | | New, No | | | | | | -96 | 65 | 108 | -200 | | | ✓ | | ✓ | | | | | WALKING ON ASBESTOS FLOOR | |
| 22 | | Flame Proof | | | | | | -220 | -200 | -120 | | | | ✓ | | | ✓ | | | | WALKING ON ASBESTOS FLOOR | |
| 23 | | | | | | | | 2.5K | 2.8K | 1.3K | | | | ✓ | | ✓ | | | | | PLASTIC CHAIR | First reading was 5 kV |
| 24 | | | | | | | | 2.5K | 1.5K | 1.8K | | | | ✓ | | | ✓ | | | | PLASTIC CHAIR | |
| 25 | | | | | | | | | | | | | | | | | | | | | | |
| 26 | | | | | | | | | | | | | | | | | | | | | | |
| 27 | | | | | | | | -.8 | 0 | | | | | | ✓ | ✓ | | | | | WALKING ON LINOLEUM | |
| 28 | | | | | | | | 1 | 2.5 | 2 | | | | | ✓ | | ✓ | | | | WALKING ON LINOLEUM | |
| 29 | | | | | | | | -.8 | 3.2 | 4.2 | | | | | ✓ | ✓ | | | | | WALKING ON ASBESTOS FLOOR | |
| 30 | | | | | | | | 3.7 | 8 | 4 | | | | | ✓ | | ✓ | | | | WALKING ON ASBESTOS FLOOR | |
| 31 | | | | | | | | 20 | 42 | 48 | | | | | ✓ | ✓ | | | | | PLASTIC CHAIR | |
| 32 | | | | | | | | 18 | 15 | | | | | | ✓ | | ✓ | | | | PLASTIC CHAIR | |
| 33 | | | | | | | | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | | | | | | | | |

INSTRUMENTATION DATA
TABULATION SHEET

| | Tested By | Garment Type | Item No | Date 1974 | Atmospheric C° Temp | Atmospheric % RH | Static Charge (Volts) Gun: Trouser | Gun: Garment | Hand Discharge Electrometer | | | Type 1 OB | Shoes NSK | Shoes Cond | Meas. made on NSK | Meas. made on Cond | Type of Operation | Notes: Additional Readings (Volts) | After 10 Washings 83206 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VanSavage | Riegelstat | 1 | | 25.5 | 27 | | | | | | | | | | | WALKING ON PLATE | | |
| 2 | | Coat, F4X | . | 10/16 | | | | | | | | | | | | | WALKING ON PLATE | | |
| 3 | | Workrite | | | | | | | 2.8K | 1.2K | 1.25K | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 4 | | | | | | | | | 700 | 600 | 700 | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 5 | | | | | | | | | 210 | 200 | 320 | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 6 | | | | | | | | | 120 | 110 | 0 | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 7 | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | -2.5 | -.2 | -1.0 | | | ✓ | ✓ | | WALKING ON PLATE | | |
| 9 | | | | | | | | | -.4 | -.4 | -.4 | | | ✓ | | ✓ | WALKING ON PLATE | | |
| 10 | | | | | | | | | 13 | 2 | 3 | | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 11 | | | | | | | | | 2 | 2 | 5 | | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 12 | | | | | | | | | -4 | -5 | +4 | 1 | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 13 | | | | | | | | | 3 | 2 | -2 | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| 14 | | | | | | | | | | | | | | | | | | | |
| 15 | VanSavage | Riegelstat | 2 | 10/18 | 26.7 | 26.5 | | | 70 | 110 | 110 | | ✓ | | ✓ | | WALKING ON PLATE | | |
| 16 | | Coat, F4X | | | | | | | 320 | 200 | | | ✓ | | | ✓ | WALKING ON PLATE | | |
| 17 | | Workrite | | | | | | | 630 | 580 | 830 | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 18 | | | | | | | | | 500 | 1.2K | 750 | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 19 | | | | | | | | | -70 | 100 | 250 | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 20 | | | | | | | | | 70 | 140 | 110 | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 21 | | | | | | | | | | | | | | | | | | | |
| 22 | | | | 10/17 | 26.7 | 27 | | | 2 | 0 | 2 | | | | | | WALKING ON PLATE | | |
| 23 | | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 24 | | | | | | | | | -5 | 4.5 | 6 | | | | | | PLASTIC CHAIR | | |
| 25 | | | | | | | | | -1 | -1 | -1 | -.7 | | | | | PLASTIC CHAIR | | |
| 26 | | | | | | | | | -.7 | -.7 | -.7 | | | | | | METAL CHAIR, GROUNDED | | |
| 27 | | | | | | | | | -2.2 | +1.5 | -3.8 | | | | | | METAL CHAIR, GROUNDED | | |
| 28 | | | | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | |
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INSTRUMENTATION DATA
TABULATION SHEET

| Row | Tested By | Garment Type | Item No | Date 1974 | Atmosphere C° Temp | % RH | Gun Trouser | Gun Garment | Static Charge (Volts) Hand Discharge Electrometer Type 610B | | | | Shoes Insul | Shoes Cond | Meas Made On Insul | Meas Made On Cond | Type of Operation | Notes Additional Readings (Volts) | After 10 Washings B3208 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Van Savage | Riegelstat | 3 | 10/18 | 26.7 | 25 | | | 180 | 600 | 520 | | ✓ | | ✓ | | WALKING ON PLATE | | |
| 2 | | Coat, F4X | | | | | | | 430 | 500 | 100 | | ✓ | | | ✓ | WALKING ON PLATE | | |
| 3 | | Workrite | | | | | | | 1.4K | 1.33K | 1.2K | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 4 | | | | | | | | | 900 | 1K | 900 | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 5 | | | | | | | | | 200 | 400 | 500 | 550 | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 6 | | | | | | | | | 170 | 160 | 400 | 600 | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 8 | | | | | | | | | -5.5 | -1 | -4.5 | | | ✓ | ✓ | | WALKING ON PLAT | | |
| 9 | | | | | | | | | -1 | -1 | -1 | | | ✓ | | ✓ | WALKING ON PLAT | | |
| 10 | | | | | | | | | 2.5 | 4 | 3 | 1.5 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 11 | | | | | | | | | -.7 | -.7 | -.7 | | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 12 | | | | | | | | | -5.5 | -3 | -4 | | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 13 | | | | | | | | | -2.5 | -.8 | -.8 | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| 15 | Van Savage | Riegelstat | A | 10/17 | 26.7 | 27 | | | | | | | | | | | WALKING ON PLATE | | |
| 16 | | Coat, F4X | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 17 | | Workrite | | | | | | | 450 | 700 | 400 | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 18 | | | | | | | | | 150 | -120 | 550 | | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 19 | | | | | | | | | 230 | 290 | 240 | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 20 | | | | | | | | | 200 | 130 | 260 | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 22 | | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 23 | | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 24 | | | | | | | | | 8 | 12 | 1.5 | 5.5 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 25 | | | | | | | | | -.7 | .7 | .7 | | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 26 | | | | | | | | | -5.5 | -4.2 | +3 | -6 | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 27 | | | | | | | | | -.5 | -1 | -.5 | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |

INSTRUMENTATION DATA
TABULATION SHEET

| | Tested By | Garment Type | Garment Item No | Date 1974 | Atmosphere C° Temp | Atmosphere % RH | Static Charge (Volts) Gun Trouser | Gun Garment | Hand Discharge Electrometer Type 610B | | | Shoes Insul | Shoes Cond | Meas. Made On Insul | Meas. Made On Cond | Type of Operation | Notes Additional Readings (Volts) | After 10 Washings B3208 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VanSound | 99% Nomex | B | 10/17 | 25.5 | 29.5 | | | | | | | | | | WALKING ON PLATE | | |
| 2 | | 1% S.S | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 3 | | Coveralls | | | | | | | 400 | 450 | 350 | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 4 | | Worklon | | | | | | | -200 | 750 | 200 | ✓ | | | ✓ | PLASTIC CHAIR | (850, 350 | 650, 300 Oct 18 25% RH) |
| 5 | | | | | | | | | -170 | -120 | -200 | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 6 | | | | | | | | | -220 | -150 | -240 | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 7 | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 9 | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 10 | | | B | | | | | | 4 | 5.5 | 5 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 11 | | | | | | | | | -1 | -.5 | -.5 | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 12 | | | | | | | | | -5 | +1 | 2 | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 13 | | | | | | | | | -.8 | -.7 | -.7 | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| 14 | | | | | | | | | | | | | | | | | | |
| 15 | | Cotton | E | 10/17 | 24.7 | 30 | | | | | | | | | | WALKING ON PLATE | | |
| 16 | | Coveralls | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 17 | | Old, with | | | | | | | 470 | 370 | 450 | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 18 | | Flameproof | | | | | | | 300 | 350 | 370 | ✓ | | | ✓ | PLASTIC CHAIR | | |
| 19 | | | | | | | | | 60 | 155 | 55 | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 20 | | | | | | | | | -10 | -10 | -10 | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 21 | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 23 | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 24 | | | | | | | | | 6 | 6 | 5 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 25 | | | | | | | | | -1 | -.6 | -.6 | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 26 | | | | | | | | | -3 | 1.5 | -2.3 | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 27 | | | | | | | | | -.7 | -.6 | -.7 | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |

INSTRUMENTATION DATA
TABULATION SHEET

| | Tested By | GARMENT: TYPE | GARMENT: ITEM NO | DATE: 1974 | ATMOSPHERE: C° TEMP | ATMOSPHERE: % RH | STATIC CHARGE (VOLTS): GUN: TROUSER | STATIC CHARGE (VOLTS): GUN: GARMENT | STATIC CHARGE (VOLTS): HAND DISCHARGE: ELECTROMETER TYPE 610B | | | | SHOES: INSUL | SHOES: COND | MEAS. MADE ON: INSUL | MEAS. MADE ON: COND | TYPE OF OPERATION | NOTES: ADDITIONAL READINGS (VOLTS) | CONTROL |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | VanSamme | Cotton | F | 10/18 | 26.1 | 25 | | | 500 | 400 | | | ✓ | | ✓ | | WALKING ON PLATE | | |
| 2 | | Coveralls | | | | | | | -70 | 600 | 450 | | ✓ | | | ✓ | WALKING ON PLATE | | |
| 3 | | New, No | | | | | | | 2.8K | 2.2K | 2.2K | | ✓ | | ✓ | | PLASTIC CHAIR | | |
| 4 | | FlameProof | | | | | | | 2K | 2.2K | -300 | 250 | ✓ | | | ✓ | PLASTIC CHAIR | (6.5K, 4K, | 3.5K OCT 18 25% RH) |
| 5 | | (CONTROL) | | | | | | | 1.5K | 1.7K | 2.1K | | ✓ | | ✓ | | METAL CHAIR, GROUNDED | | |
| 6 | | | | | | | | | 1K | 1.8K | 1.8K | | ✓ | | | ✓ | METAL CHAIR, GROUNDED | | |
| 7 | | | | | | | | | | | | | | | | | | | |
| 8 | | | | | | | | | 2.2 | 2.5 | 3.2 | | | ✓ | ✓ | | WALKING ON PLATE | | |
| 9 | | | | | | | | | -.7 | -.7 | | | | ✓ | | ✓ | WALKING ON PLATE | | |
| 10 | | | | | | | | | .8 | 3.7 | 16 | 4 | | ✓ | ✓ | | PLASTIC CHAIR | | |
| 11 | | | | | | | | | -1 | -.5 | -.3 | | | ✓ | | ✓ | PLASTIC CHAIR | | |
| 12 | | | | | | | | | 25 | 22 | 20 | | | ✓ | ✓ | | METAL CHAIR, GROUNDED | | |
| 13 | | | | | | | | | -.7 | -.7 | -.7 | | | ✓ | | ✓ | METAL CHAIR, GROUNDED | | |
| 14 | | | | | | | | | | | | | | | | | | | |
| 15 | | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 16 | | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 17 | | | | | | | | | | | | | | | | | PLASTIC CHAIR | | |
| 18 | | | | | | | | | | | | | | | | | PLASTIC CHAIR | | |
| 19 | | | | | | | | | | | | | | | | | METAL CHAIR, GROUNDED | | |
| 20 | | | | | | | | | | | | | | | | | METAL CHAIR, GROUNDED | | |
| 21 | | | | | | | | | | | | | | | | | | | |
| 22 | | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 23 | | | | | | | | | | | | | | | | | WALKING ON PLATE | | |
| 24 | | | | | | | | | | | | | | | | | PLASTIC CHAIR | | |
| 25 | | | | | | | | | | | | | | | | | PLASTIC CHAIR | | |
| 26 | | | | | | | | | | | | | | | | | METAL CHAIR, GROUNDED | | |
| 27 | | | | | | | | | | | | | | | | | METAL CHAIR, GROUNDED | | |
| 28 | | | | | | | | | | | | | | | | | | | |
| 29 | | | | | | | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | | | | | | | |
| 31 | | | | | | | | | | | | | | | | | | | |
| 32 | | | | | | | | | | | | | | | | | | | |
| 33 | | | | | | | | | | | | | | | | | | | |
| 34 | | | | | | | | | | | | | | | | | | | |
| 35 | | | | | | | | | | | | | | | | | | | |
| 36 | | | | | | | | | | | | | | | | | | | |
| 37 | | | | | | | | | | | | | | | | | | | |

ORIENTATION DATA
TABULATION SHEET

| Tested By | Garment Type | Item No. | Date 1974 | Atmosphere C° Temp | R.H. | Static Charge (Volts) Gun | Voltmeter Type 610B | | | | | Shoes Insul | Shoes Cond | Shoes Other | Floor Surface Meas Made On Insul | Cond | Other | Resistance | | Type of Operation | Notes: Additional Readings (Volts) | After Ten Washings Tests in B 3109 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Van Sanne | Riegelstat | 1 | 23 Oct | 21.1 | 19 | | -200 | -100 | 200 | 200 | 350 | ✓ | | | | ✓ | | | | PLASTIC CHAIR | 350 | |
| | Coat FYR | | | | | | | | | | | | | | | | | | | | | |
| | Workrite | | | | | | | | | | | | | | | | | | | | | |
| Van Sanne | Coveralls | B | 23 Oct | 21.1 | 19 | | -200 | -300 | -100 | | | ✓ | | | | ✓ | | | | PLASTIC CHAIR | | |
| | 99% Nomex | | | | | | | | | | | | | | | | | | | | | |
| | 1% SS. | | | | | | | | | | | | | | | | | | | | | |
| | Worklon | | | | | | | | | | | | | | | | | | | | | |
| Van Sanne | Cotton | F | 23 Oct | 21.1 | 19 | | 8K | 9K | 6K | 7.5K | | ✓ | | | | ✓ | | | | PLASTIC CHAIR | | CONTROL |
| | Coveralls | | | | | | | | | | | | | | | | | | | | | UNWASHED |
| | New, No | | | | | | | | | | | | | | | | | | | | | |
| | Flame Proof | | | | | | | | | | | | | | | | | | | | | |
| | (Control) | | | | | | | | | | | | | | | | | | | | | |
| Van Sanne | Cotton | C | 23 Oct | 21.1 | 19 | | 2.4K | 1.9K | 1.9K | 2.0K | | ✓ | | | | ✓ | | | | PLASTIC CHAIR | | |
| | Coveralls | | | | | | | | | | | | | | | | | | | | | |
| Van Sanne | Coveralls | G | 23 Oct | 21.1 | 19 | | 3.5K | 2.5K | 3K | | | ✓ | | | | ✓ | | | | PLASTIC CHAIR | | CONTROL |
| | 99% Nomex | | | | | | | | | | | | | | | | | | | | | UNWASHED |
| | 1% SS. | | | | | | | | | | | | | | | | | | | | | |
| | Worklon | | | | | | | | | | | | | | | | | | | | | |

# APPENDIX C

## RELATIVE RESISTIVITY OF TEST GARMENTS

INSTRUMENTATION DATA
TABULATION SHEET

| MATERIAL OR GARMENT | ITEM NO | 24°C PRIOR TO TEN WASHINGS - OHMS 37 TO 40 % RH, 75 °F B320B VOLT/CURRENT | RESISTANCE | SIMPSON VOM | PRIOR TO TEN WASHINGS 21.1°C 19 % RH, 70°F B3109 OHMS VOLT/CURRENT | RESISTANCE | SIMPSON VOM | AFTER TEN WASHINGS 24 TO 26.7C° 25 % RH, 75 TO 80 F° OHMS B3208 VOLT/CURRENT | RESISTANCE | SIMPSON VOM | NOTES |
|---|---|---|---|---|---|---|---|---|---|---|---|
| HIGH RESISTANT RUBBER PLATFORM | — | 6 $\times 10^{11}$ | — | — | 2 $\times 10^{11}$ (1000 VOLTS) | — | — | $10^{10}$ (1000 VOLTS) | — | — | |
| Riegelstat Coat F4X | 1 | * | 20K | 3K ⊕ | * | * | 110K | * | * | 20 Meg | |
| Riegelstat Coat F4X | 2 | 1.41 $\times 10^{9}$ | * | 20 Meg + ; 470 ⊕ | * | * | 170K | * | * | 115 + | |
| Riegelstat Coat F4X | 3 | * | 100K | 800 ⊕ ; 150 ⊕ | * | * | 130K | * | * | 115 + | |
| Riegelstat Coat F4X | A | * | * | 600 ⊕ | * | * | 110K | * | * | 240 + | |
| NOMEX plus 1% G.S. COVERALLS | B | * ; * | * ; 39K | 20 Meg ; 20 Meg | 4.175 $\times 10^{11}$ (100 VOLTS) | 2.8 $\times 10^{11}$ | >20 Meg | * | 47K | 20 Meg + ; 590 ⊕ | |
| Cotton Coveralls, New, NO FLAME PROOF | C | 1.25 $\times 10^{9}$ | — | — | 3.33 $\times 10^{12}$ (1000 VOLTS) | — | — | 4.3 $\times 10^{5}$ (400 VOLTS) | 2.5 $\times 10^{8}$ | 5 Meg | |
| Cotton Coveralls, New, WITH FLAME PROOF | D | 1.66 $\times 10^{6}$ | — | — | 2 $\times 10^{9}$ (100 VOLTS) | 26 $\times 10^{9}$ | — | 6 $\times 10^{5}$ (100 VOLTS) | 7.6 $\times 10^{5}$ | 5 Meg | |
| Cotton Coveralls, OLD, WITH FLAME PROOF | E | 134K | — | — | 1.66 $\times 10^{6}$ (100 VOLTS) | — | — | 1.28 $\times 10^{6}$ (300 VOLTS) | 5.9 $\times 10^{7}$ | 5 Meg | |

KEY: * BEYOND RANGE OF ELECTROMETER
+ INITIAL READING PRIOR TO CURRENT AND RESISTANCE TESTS
⊕ AFTER CURRENT AND RESISTANCE TESTS

NOTE: THE COTTON COVERALLS WERE TREATED WITH FLAME PROOFING AFTER EACH WASHING
THE RIEGELSTAT SAMPLE PATCHES WERE NOT WASHED

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APPENDIX D

CAPACITANCE MEASUREMENTS OF TEST SUBJECT

## CAPACITANCE MEASUREMENTS OF TEST SUBJECT

1. Insulated Spark Proof Shoes

| Capacitance (Picofarads) Measurement Plate was | | Test Performed in Building | |
|---|---|---|---|
| Grounded | Ungrounded | 3208 | 3109 |
| 110 | 108 | x | - |
| 120 | 120 | - | x |
| 110 | 110 | - | x |

2. Conductive Shoes

| Capacitance (Picofarads) Measurement Plate was | | Test Performed in Building | |
|---|---|---|---|
| Grounded | Ungrounded | 3208 | 3109 |
| 1380 | - | x | - |
| 1520 | - | x | - |
| 4600 | 3770 | - | x |
| 3470 | - | - | x |

3. Test Subject Capacitance Standing on Asbestos Floor Tile

| Capacitance (Picofarads) Shoes | | Test Performed in Building |
|---|---|---|
| Insulated | Conductive | |
| 100 | 140 | 3208 |

4. Capacitance Measurement Plate

The measurement plate is a copper sheet 91.4 x 244 cm (3 x 8 ft) which lays on, and is insulated from, two sheets of polyethylene. For this test the copper sheet is ungrounded (insulated). Test performed in Bldg. 3109.

C = 12,300 picofarads

5. Capacitance of Test Subject Standing on Polyethylene Sheet

A polyethylene sheet was placed over the copper plate on which test subject stood and a capacitance measurement was taken. Test performed in Bldg. 3208.

C = 1200 picofarads

APPENDIX E

HAND TO GROUND THROUGH SHOE RESISTANCE
MEASUREMENT OF TEST SUBJECT

HAND TO GROUND THROUGH SHOE RESISTANCE MEASUREMENT OF TEST SUBJECT

1. Insulated, Spark Proof Shoes

| Metal Floor Grounded | Insulated from Ground |
|---|---|
| $4 \times 10^{11}$ ohms | $10^{12}$ to $10^{13}$ ohms |

2. Conductive Shoes

| Metal Floor | |
|---|---|
| Grounded | Ungrounded |
| 500K ohms<br>700K ohms<br>900K ohms | n/a |

APPENDIX F

EQUIPMENT

## EQUIPMENT

1. Electrical

a. Electrometer, Model 610B, including probe Model 6103A (1000:1) and probe model 6101A (1:1). Manufactured by Keithley Instruments.

b. High Voltage Power Supply Model 240A, manufactured by Keithley Instruments

c. Impedance Bridge, Type No. 1650A, manufactured by General Radio Co.

d. VOM, Simpson Model 260

e. Static Meter, Model CMI-7777, manufactured by Custom Materials, Inc., Chelmsford, Massachusetts

2. Accessories

a. Conductive shoes, Government issue

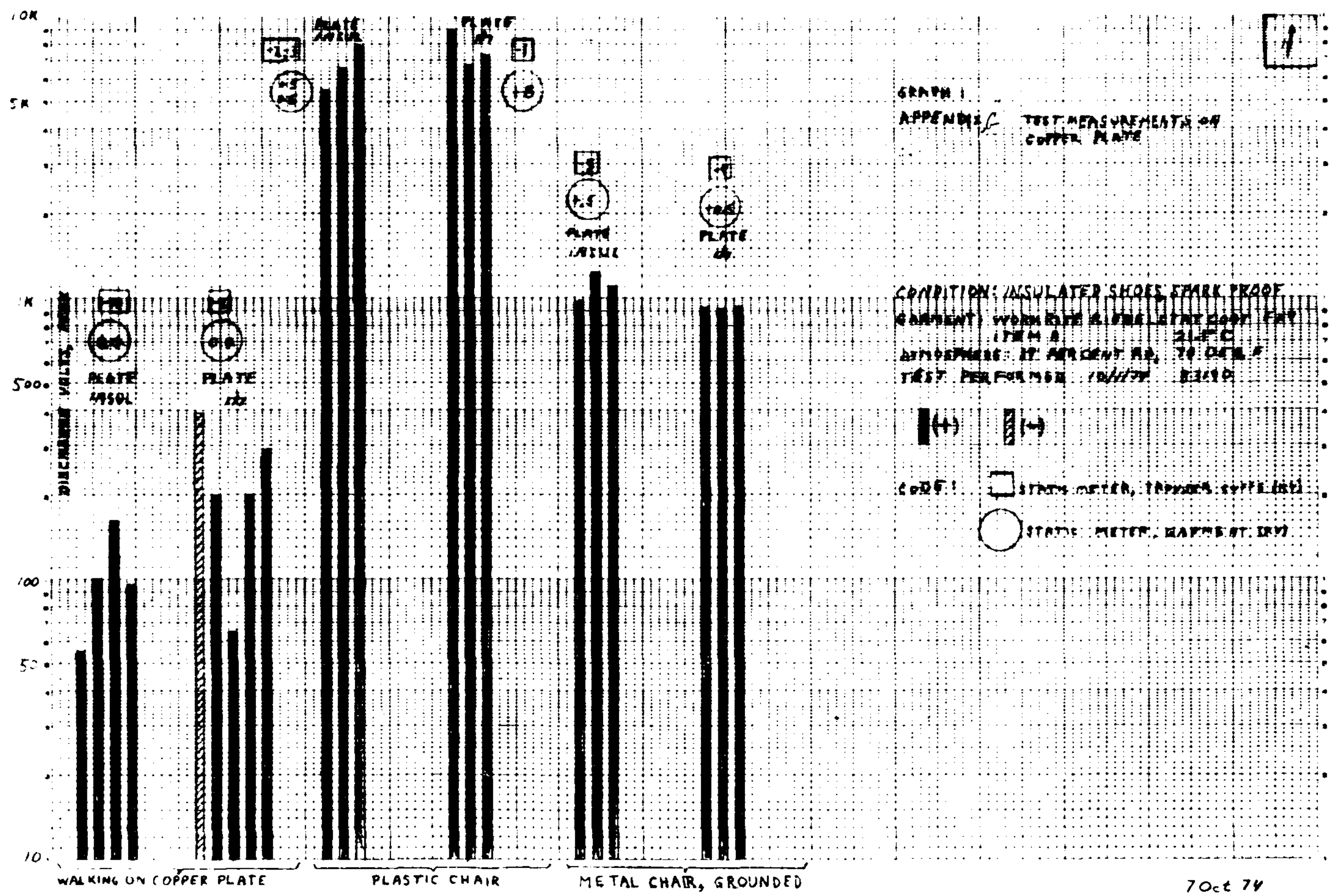
b. Insulated shoes, spark proof, Government issue

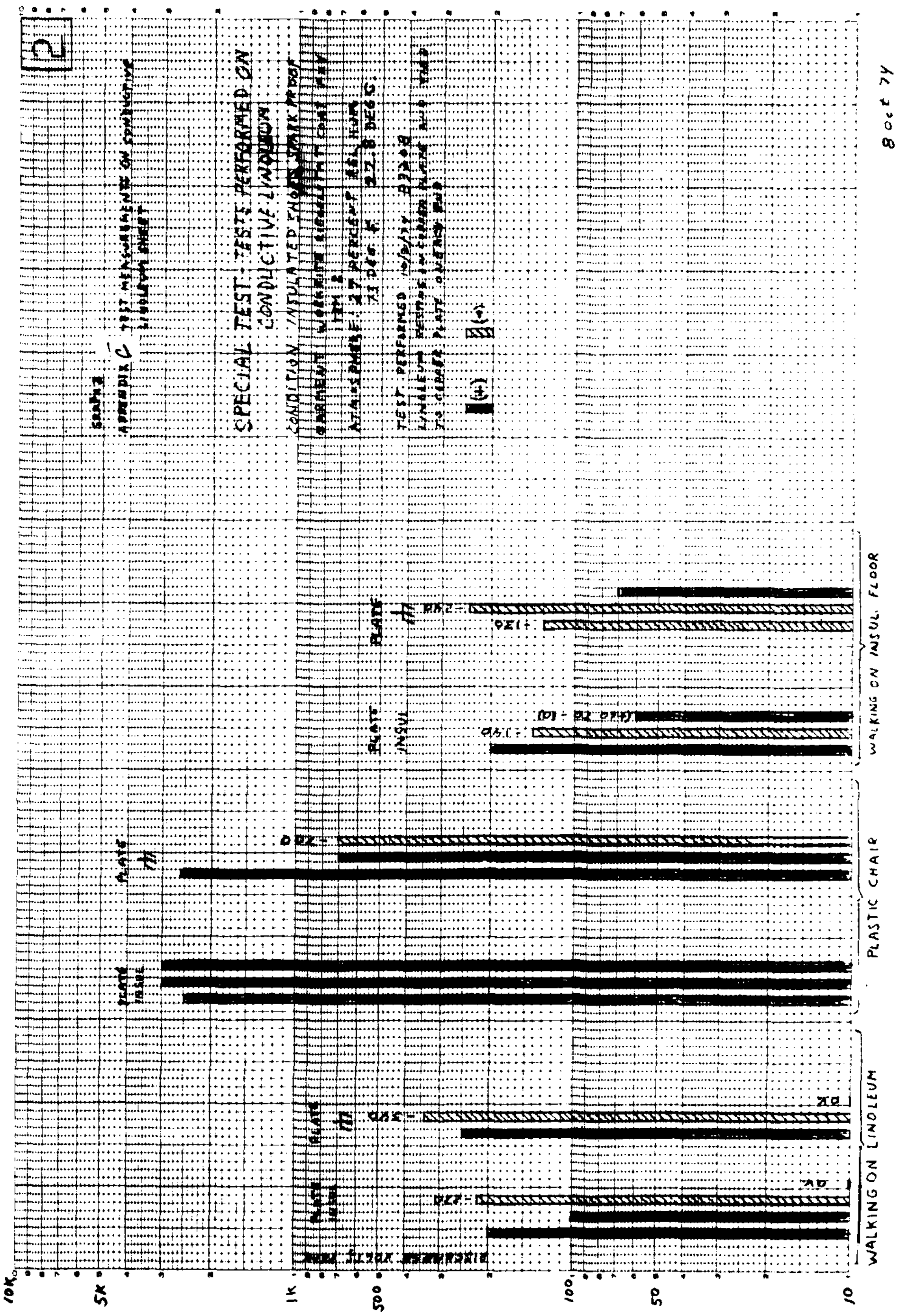
c. Copper plate 8.128 mm (.032 in.) thick, 91.4 x 244 cm (3 x 8 ft)

d. Two each polyethylene sheets 5.08 mm (.020 in.) thick, 122 x 274 cm (4 x 9 ft)

# APPENDIX G

# ELECTROSTATIC HAND DISCHARGE


GRAPH I
APPENDIX C TEST MEASUREMENTS ON COPPER PLATE
CONDITION: INSULATED SHOES, SPARK PROOF
CODE:
STATIC METER
WALKING ON COPPER PLATE
PLASTIC CHAIR
METAL CHAIR, GROUNDED
PLATE
10K
5K
1K
500
100
50
10
7 Oct 74


2
GRAPH 3
APPENDIX C  TEST MEASUREMENTS ON CONDUCTIVE LINOLEUM SHEET
SPECIAL TEST - TESTS PERFORMED ON CONDUCTIVE LINOLEUM
CONDITION  INSULATED SHOES SPARK PROOF
ATMOSPHERE: 27 PERCENT REL HUM  73 DEG F  22.8 DEG C
TEST PERFORMED
(+)
(-)
10K
5K
1K
500
100
50
10
PLATE INSUL
PLATE
WALKING ON LINOLEUM
PLASTIC CHAIR
WALKING ON INSUL. FLOOR
8 Oct 74

APPENDIX H

COMPARISON OF ELECTROSTATIC HAND DISCHARGE OF TEST GARMENTS

INSTRUMENTATION DATA
TABULATION SHEET

PLASTIC CHAIR, MEASUREMENT PLATE UNGROUNDED (INSULATED)
PRIOR TO TEN WASHINGS

Tests performed 30 September and 1 October 1974 in Bldg. 3109

DISCHARGE KILOVOLTS, MAX INSULATED SHOES

| GARMENT 19% RH, 70° F 21.1°C | Item No. | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Riegelstat Coat F 4 X, Workrite | 1 | | | | | | | | (2) | | |
| Riegelstat Coat F4X, Work Rite | 2 | | | | | | | | | | |
| Riegelstat Coat F4X, Work Rite | A | | | | | | | | | | |
| Coveralls, 1% SS 99% Nomex Work Lon | B | | | | | | | | | | |
| Cotton Coveralls New, No Flame Proof | C | | | | | | | | | | |
| Cotton Coveralls New, with Flame Proof | D | | | | | | | | | | |
| Cotton Coveralls Old, with Flame Proof | E | | | | | | | | | | |

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INSTRUMENTATION DATA
TABULATION SHEET

24 DEG.C NOM

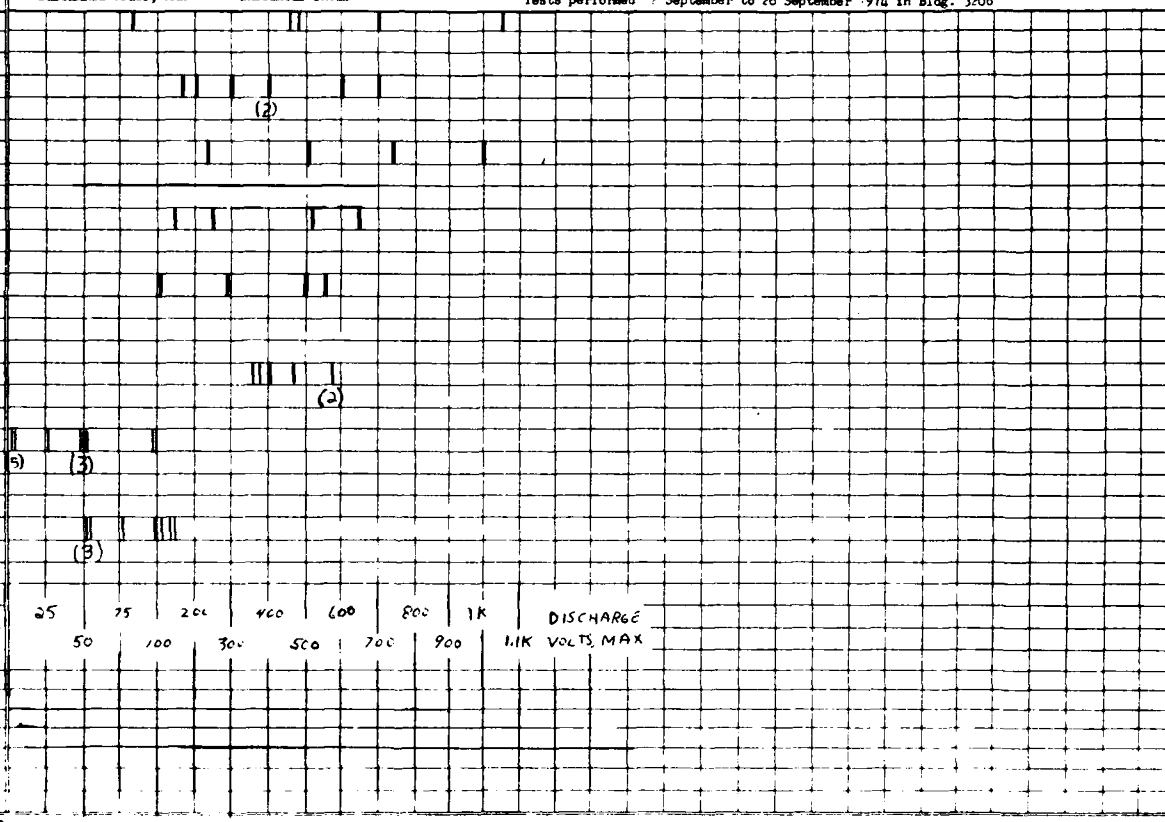
PLASTIC CHAIR, MEASUREMENT PLATE UNGROUNDED (INSULATED)

PRIOR TO TEN WASHINGS

DISCHARGE VOLTS, MAX    INSULATED SHOES

Tests performed ?? September to 26 September 1974 in Bldg. 3206

| GARMENT 35 TO 39% RH 75 DEG F (NOM) | Item No |
|---|---|
| Riegelstat Coat F4X, WORKRITE | 1 |
| Riegelstat Coat F4X, WORKRITE | 2 |
| Riegelstat Coat F4X, WORKRITE | 3 |
| Riegelstat Coat F4X, WORKRITE | A |
| COVERALLS, 1% SS 99% NOMEX WORKLON | B |
| Cotton Coveralls New, No Flame Proof | C |
| Cotton Coveralls New with Flame Proof | D |
| Cotton Coveralls Old, with Flame Proof | E |

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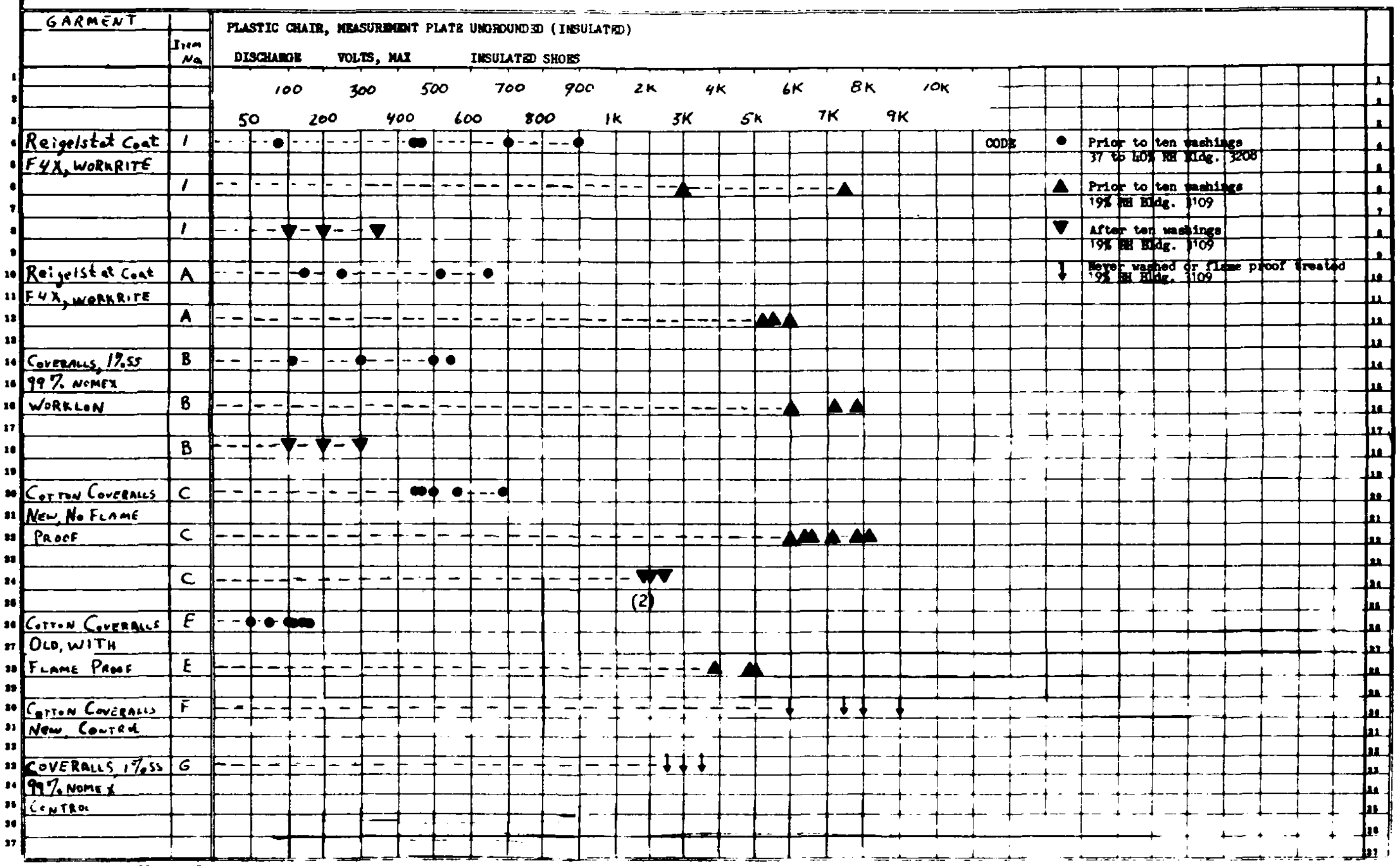
INSTRUMENTATION DATA
TABULATION SHEET

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